



State of Ohio Environmental Protection Agency

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Waste Management Division
U.S. EPA, Region V
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George V. Voinovich

Governor

Donald R. Schregardus

Director

January 13, 1992

RE: ASHLAND CHEMICAL
DUBLIN R&D LABORATORY
OHD042311209
PR/VSI REPORT COMMENTS

Ms. Lisa Pierard, Chief
HRM-8J
RCRA Permitting Branch
U.S. EPA, Region V
77 West Jackson Boulevard
Chicago, IL 60604

Dear Ms. Pierard:

Enclosed are responses (including replacement pages) to USEPA comments on the PR/VSI Report for the above facility.

Hopefully these responses are adequate. I was a bit confused by the fifth comment regarding the "city of Ashland." I tried to cover both the city of Dublin (where Ashland Chemical is located) and the water supply to the facility itself in my response.

If you have any questions or need additional information please call me at (614) 771-7505.

Sincerely,

Jeffrey W. Reynolds
Site Coordinator
Emergency and Remedial Response
Central District Office

JR/bjh
Doc037/9

Enclosure

cc: Janine Secord, DHWM/CO
Dave Sholtis, DHWM/CO
Sue Nitecki, DERR/CO
Lundy Adelsberger, DHWM/CDO
DERR/CDO File



ATTACHMENTS:

- A. Visual Site Inspection Agenda Letter
- B. Clean Closure Plan for Underground Storage Tank and Ohio EPA Approval
- C. Ohio EPA Confirmation of Clean Closure for the Underground Storage Tank
- D. Notice of Deficiency and Letter of Warning (Part B Application)
- E. Letter to Request Withdrawal of Hazardous Waste Facility Permit Application
- F. Well Logs
- G. Visual Site Inspection Summary Report
- H. Photograph Log
- I. VSI Field Notes

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File information indicates no history of spills or releases at the facility. VSI interviews concur with this information. Ashland personnel know of no significant releases to the environment (Refs. 17, 18, & 30).

III. GENERAL DESCRIPTION

A. FACILITY DESCRIPTION

The Ashland Chemical, Inc. Research and Development Laboratory is a wholly owned subsidiary of Ashland Oil, Inc. This facility is located at 5200 Blazer Parkway in Dublin (Figure 1, pg. 2), a suburb to the northwest of Columbus. The facility lies inside Interstate 270 and south of State Route 161, to the west of downtown Dublin. The R & D Laboratory is located on approximately 122 acres of land at 83°08'07" west longitude and 40°05'26" north latitude. Ashland has been conducting operations at this site since 1971 (Refs. 2, 6, 10, 11, & 17).

As the main research facility and headquarters for Ashland Chemical, Inc., the R & D Laboratory is involved in research in foundry products, polyester resins, specialty polymers, adhesives, electronic and laboratory chemicals, industrial chemicals and solvents, and polymers. The facility has in the past also done research in carbon black, petrochemicals, and in areas outside their line of business (Refs. 3 & 7).

Although they originally applied for a Part B Permit (and are currently operating under interim status for container storage) for storage of hazardous waste reasons, the facility is not currently storing these wastes longer than 90 days (Refs. 7 & 17). On June 14, 1991, Ohio EPA received a letter from the

G. RECEPTORS

The Ashland facility is located in a mixed business/industrial park. There are residential areas located to the west (on the other side of Interstate 270) and to the south (along Rings Road and beyond) of Ashland.

There are tributaries of the Scioto to the north (Tributary S1) and to the south (Tributary C1) that cross Ashland property. Further south, but north of Rings Road, Cramer Ditch intersects with Tributary S1. All streams drain to the Scioto River about one mile to the east.

Ashland employees are served by the facility well (which is located on the Drum Storage Pad - SWMU #5). There are a total of 1000 employees in the three buildings at the facility. However only the northern two buildings (about 600 to 700 employees) are served by the well. The other (newer) building is hooked up to city of Columbus water (which also serves the city of Dublin).

The Ohio Department of Natural Resources has located well logs for residences to the west, southwest, and south (along Rings Road) of the facility. For more information concerning the geology and specific locations of wells in the vicinity see Section III. F. 6.- Aquifer Contamination Potential, Figure 13 (pg. 49), and Attachment D- Well Logs (Refs. 12, 17, 32, & 33).

SWMU No. 1

Unit Name: Mixing Unit (Photograph No.1)

Unit Description: A mobile mixing container with approximately 100 gallons capacity. This unit has always been used in the South Bay Waste Management Area (SWMU #2).

Date of Start-Up: 1985

Date of Closure: Unit is still in use, although not used for waste mixing since July 1990.

Waste Managed: Waste resins diluted in unit with waste solvent to reduce viscosity so wastes can be pumped to Aboveground Storage Tanks. Waste codes D001, F003, and F005.

Release Controls: Used in the South Bay Waste Management Area (SWMU #2) which has a floor drain recovery system.

History of Releases: No known releases. No evidence of releases observed (unit in good condition at VSI).

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is low due to the indoor location of this unit and building design.

Surface Water: The release potential to surface water is low due to the indoor location of this unit and building design.

Air: The release potential to air is low due to the indoor location of this unit and building design.

Subsurface Gas: The release potential of subsurface gas is low due to the indoor location of this unit and building design.

(Refs. 1, 10, 17, & 30)

SWMU No. 2

Unit Name: South Bay Waste Management Area
(Photograph Nos. 2, 3 & 4)

Unit Description: A 1,520 square foot room with a concrete floor. The room has a floor drain to contain spills. The drain has two trenches. The large trench is 19'6" long, 18" deep, and 12 1/2" wide. The small trench is 15' long, 5 1/2" deep, and 4" wide. Any spills to the trench portion of the drain are pumped back into a drum. A plug is usually kept in the drain, except when cleaning the floor. The drain leads to a sump in the room below, which is pumped to the city of Columbus sewers.

Two waste lines leading to the Aboveground Storage Tanks (SWMUs #8 & #9) originate in this room. Drums that contain pumpable compatible wastes are emptied into the tanks via these lines.

Excess laboratory chemicals are also stored in this area. Ashland tries to find universities that can make use of these unneeded reagents.

Date of Start-Up: 1985

Date of Closure: This unit is currently in operation.

Waste Managed: Solvents, resins, varied laboratory wastes, etc. All facility chemical wastes pass through this area. Once compatibility is established, most waste is pumped to Aboveground Storage Tanks #8 & #9). Other waste is sent to the Drum Storage Pad. Waste codes D001, F003, & F005.

Release Controls: Floor drain with plug.

History of Releases: No known releases. Evidence of some floor staining but unit generally in good condition at VSI.

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is low

based on the indoor location of this unit and building design.

Surface Water: The release potential to surface water is low based on the indoor location of this unit and building design.

Air: The release potential to air is low based on the indoor location of this unit and building design.

Subsurface Gas: The release potential of subsurface gas is low based on the indoor location of this unit and building design.

(Refs. 7, 10, 11, 17, 23, & 30)

SWMU No. 3

Unit Name: Aboveground Storage Tank #8
(Photograph Nos. 5, 7, & 8)

Unit Description: A 2,000 gallon carbon steel tank with aboveground piping. The tank is filled through carbon steel waste lines leading from the South Bay Waste Management Area (SWMU #2).

The unit is in a fenced and locked tank farm with three other tanks (SWMU #4 and two solvent raw material tanks #6 & #7). The tank farm has a gravel and dirt dike with a 9,080 gallon capacity (capacity of four tanks in tank farm totals 10,000 gallons).

Ashland is currently in the process of removing Aboveground Storage Tanks #6 & #7.

Date of Start-Up: 1978

Date of Closure: This unit is currently in operation.

Waste Managed: Waste solvents and resins. Waste codes D001, F003, & F005.

Release Controls: Annual integrity testing of tanks and external piping. Overfill alarm system. Gravel and dirt dike with 9,080 gallon capacity (capacity of four tanks in tank farm totals 10,000 gallons).

History of Releases: No known releases. No evidence of releases (i.e. stained gravel, etc.) observed. Unit in good condition at VSI.

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is high due to the lack of adequate secondary containment and the age of the tank.

Surface Water: The release potential to surface water is medium due to the distance to surface water and site topography.

Air: The release potential to air is medium due to the age of the tank and its outdoor location.

Subsurface Gas: The release potential of subsurface gas is high due to the lack of adequate secondary containment and the age of the tank.

(Refs. 6, 7, 10, 17, 23, 30, 34, 35, & 36)

SWMU No. 4

Unit Name: Aboveground Storage Tank #8
(Photograph Nos. 6, 7, & 8)

Unit Description: 3,000 gallon carbon steel tank with
aboveground piping. The tank is
filled through carbon steel waste
lines leading from the South Bay Waste
Management Area (SWMU #2).

The unit is in a fenced and locked
tank farm with three other tanks (SWMU
#3 and two solvent raw material tanks
#6 & #7). The tank farm has a gravel
and dirt dike with a 9,080 gallon
capacity (capacity of four tanks in
tank farm totals 10,000 gallons).

Ashland is currently in the process of
removing Aboveground Storage Tanks #6
& #7.

Date of Start-Up: 1978

Date of Closure: This unit is currently in operation.

Waste Managed: Waste solvents and resins. Waste
codes D001, F003, & F005.

Release Controls: Annual integrity testing of tanks and
external piping. Overfill alarm
system. Gravel and dirt dike with
9,080 gallon capacity (capacity of
four tanks in tank farm totals 10,000
gallons).

History of Releases: No known releases. No evidence of
releases (i.e. stained gravel, etc.)
observed. Unit in good condition at
VSI.

Conclusions: Soil/Groundwater: The release
potential to soil/groundwater is high
due to the lack of adequate secondary
containment and the age of the tank.

Surface Water: The release potential
to surface water is medium due to the
distance to surface water and site
topography.

Air: The release potential to air is medium due to the age of the tank and its outdoor location.

Subsurface Gas: The release potential of subsurface gas is high due to the lack of adequate secondary containment and the age of the tank.

(Refs. 6, 7, 10, 17, 23, 30, 34, 35, & 36)

SWMU No. 5

Unit Name: Drum Storage Pad (Photograph Nos. 9, 10, 11, & 12)

Unit Description: An approximately 10,000 square foot six inch thick concrete pad. About 3,200 square feet of the north edge of the pad is used for hazardous waste storage. The pad is surrounded by a locked chain link fence that is six feet nine inches tall. A chain link fence also separates the southern third of the pad (maintenance area) from the northern two-thirds, the waste storage area. A maximum of 400-55 gallon drums (22,000 gallons) of hazardous waste have been stored on the pad.

A well house is located on the northeast corner of the pad. This well supplies water for the R & D Building and one of the two Administration Buildings (approximately 600-700 people). The water line for the well runs west across the northern edge of the pad under the hazardous waste storage section of the pad (and under a non-hazardous waste storage section).

The pad is located within 100 feet of surface water (Tributary S1) and probably overlaps the associated flood plain (see Figure 10, pg. 44).

Date of Start-Up: 1978

Date of Closure: This unit is currently in operation but a closure plan for the unit was submitted on June 14, 1991.

Waste Managed: Characteristic wastes including ignitable, corrosive, reactive, and toxic (various metals), spent solvents, etc. Also a variety of laboratory generated listed wastes. Waste codes D001-004, 005-009, 011, F001, 003, 005, 007, U009, 023, 122, 127, 223, and P028.

Release Controls:

Concrete appears to be in good condition. Drums are on pallets and inspected frequently. No secondary containment.

History of Releases:

No known releases. Minimal staining of concrete observed but unit in good condition at VSI. No evidence of releases observed in soil or grass surrounding the pad.

Conclusions:

Soil/Groundwater: The release potential to soil/groundwater is high due to the lack of any secondary containment of the unit.

Surface Water: The release potential to surface water is high due to the lack of secondary containment and the proximity of surface water (just north of the drum pad, within 100 feet) to the unit. The flood plain of this stream probably overlaps with the pad.

Air: The release potential to air is medium due to the outdoor location of the unit.

Subsurface Gas: The release potential of subsurface gas is high due to the lack of secondary containment of the unit.

(Refs. 1, 3, 8, 10, 17, 23, & 30)

SWMU No. 6

Unit Name: Inside Interim Drum Storage Area
(Photograph No. 13)

Unit Description: This hazardous waste storage area occupies approximately 150 square feet of the 1,600 square foot solvent storage room. Waste drums are stored here temporarily while waste is accumulated in the drums. One drum of waste was stored in the room at the time of the VSI (by the Polyesters Division). The area reserved for storage of wastes is in the northwest corner of the room.

The Underground Storage Tank, SWMU #8, used to connect to this room via piping through the wall. The tank has since been removed and the hole patched (although it is visible in Photograph #15).

Date of Start-Up: 1971

Date of Closure: This unit is currently in operation.

Waste Managed: Currently the only drum in this area is being accumulated by the Polyesters Division. Previously this was the only interim drum storage area (until the Outside Interim Drum Storage Area, SWMU #7, came into use) and all labs accumulated their wastes here. Waste codes D001-004, 006-009, 011, F001, 003, 005, 007, U127 and P028.

Release Controls: None.

History of Releases: No known releases. Some floor staining in the area but unit in good condition at VSI (no cracks noticed).

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is low due to the indoor location of the unit and building design.

Surface Water: The release potential to surface water is low due to the

indoor location of the unit and building design.

Air: The release potential to air is low due to the indoor location of the unit and building design.

Subsurface Gas: The release potential of subsurface gas is low due to the indoor location of the unit and building design.

(Refs. 1, 7, 10, 17, 23, & 30)

SWMU No. 7

Unit Name: Outside Interim Drum Storage Area
(Photograph No. 14)

Unit Description: A 25 square foot concrete area along the north exterior wall of the building. The area is covered with a tin roof. Several drums are simultaneously accumulated by many labs. The wastes are separated by type and by the divisions generating the waste. The area is surrounded by other paved and concrete areas.

Date of Start-Up: 1990

Date of Closure: This unit is currently in operation.

Waste Managed: Most of the laboratory wastes generated by the facility. Waste codes D001-004, 006-009, 011, F001, 003, 005, 007, U127, and P028.

Release Controls: Sorbent socks surround drums (for spills).

History of Releases: No known releases. The concrete is stained in the area of the drums but unit is otherwise in good condition (no cracks noticed during VSI).

Conclusions:

Soil/ Groundwater: The release potential to soil/groundwater is medium due to the location of the unit (adjacent to the building surrounded by paved areas).

Surface water: The release potential to surface water is medium due to the location of the unit and the distance to surface water.

Air: The release potential to air is medium due to the outdoor location of the unit.

Subsurface Gas: The release potential of subsurface gas is medium due to the

location of the unit (adjacent to the
building surrounded by paved areas).

(Refs. 1, 7, 10, 17, 23, & 30)

SWMU No. 8

Unit Name: Underground Storage Tank (Photograph No. 15)

Unit Description: The tank was 21 feet long and 8 feet in diameter having an 8,000 gallon capacity. It was constructed of stainless steel. Aboveground piping connected the tank to the Inside Interim Drum Storage Area (SWMU #6).

Date of Start-Up: 1978

Date of Closure: Unit underwent RCRA closure and was removed in 1988.

Waste Managed: Waste codes D001, F001, F002, F003, and F005 (Previously used in similar capacity as Aboveground Storage Tanks).

Release Controls: None.

History of Releases: After tank removal (1988) trace levels of residual contaminants (methylene chloride, 1,1,1-trichloroethylene, and toluene) were found. After additional excavation, sampling of removed soils showed no detectable levels of contaminants in the removed soils. No other history of release.

Conclusions:

Soil/Groundwater: The release potential to soil/groundwater is zero since the unit has been removed.

Surface Water: The release potential to surface water is zero since the unit has been removed.

Air: The release potential to air is zero since the unit has been removed.

Subsurface Gas: The release potential of subsurface gas is zero since the unit has been removed.

(Refs. 3, 4, 17, 22, & 30)

V. SUMMARY OF SUGGESTED FURTHER ACTIONS

TABLE 8 - SUMMARY OF SUGGESTED FURTHER ACTIONS

UNIT NO.	UNIT NAME	OPERATIONAL DATES	SUGGESTED FURTHER ACTION	EVIDENCE OF RELEASE
1	Mixing Unit	1985-present	None at this time	No
2	South Bay Waste Mgmt. Area	1985-present	Test floor drain integrity	Yes*
3	Aboveground Stor. Tank #8	1978-present	Concrete dike for tank farm	No
4	Aboveground Stor. Tank #9	1978-present	Concrete dike for tank farm	No
5	Drum Storage Pad	1978-present	Move the unit & dike the unit	Yes**
6	Inside Inter. Drum Storage	1971-present	None at this time	Yes*
7	Outside Inter Drum Storage	1990-present	Concrete dike the area	Yes*
8	Underground Storage Tank	1978-1989	None- unit removed	No

* - Some floor/concrete staining- but staining appears to be minimal and no guidance exists to sample this type of unit.

** - Some concrete staining but pad is being RCRA closed.

(Refs. 4 & 17)

**ATTACHMENT B. CLEAN CLOSURE PLAN FOR UNDERGROUND STORAGE TANK
AND OHIO EPA APPROVAL**



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020
(614) 644-2329

George V. Voinovich
Governor

Donald R. Schregardus
Director

September 18, 1991

Re: Ashland Chemical, Inc.
Dublin R&D Laboratory
OHD042311209
PR/VSI Report

Ms. Lisa Pierard, Chief
Ohio RCRA Permitting Section
U.S. EPA, Region V
5HR-JCK-13
230 South Dearborn Street
Chicago, IL 60604

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SEP 23 1991

OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V.

Dear Ms. Pierard:

Enclosed please find the Preliminary Review/Visual Site Inspection Report for the Ashland Chemical, Inc., R&D Laboratory in Dublin, Ohio. This report presents the conclusion of the Preliminary Review (PR) and the Visual Site Inspection (VSI). The PR of all pertinent files was completed prior to the April 26, 1991 VSI.

The PR listed six Solid Waste Management Units (SWMUs) and no Areas of Concern (AOCs). However, following the VSI 2 more SWMUs were identified for a total of 8 SWMUs, with no change in the number of AOCs.

Please feel free to contact Jeff Reynolds in the Central District Office at (614) 771-7505 or Janine Secord in the Central Office at (614) 644-2934 if you have any questions.

Sincerely,

David A. Sholtis
Assistant Chief, RCRA
Division of Hazardous Waste Management

Sp.DAS.js.lcn

Enclosure

cc w/o enclosures:

Sue Nitecki, DERR
Janine Secord, DSHWM
Debra Strayton, DERR
Lundy Adelsberger, DSHWM, CDO
Jeff Reynolds, DERR, CDO



Comments on RFA for Ashland Chemical

OHD 042 311 209

Prepared by OEPA dated 9-18-91

In general the submittal is well prepared and written, and satisfactory, but with the following comments:

PAGE ii ATTACHMENT B: As an on-going phrasing, Ohio EPA Acceptance shall be Ohio EPA Approval.

PAGE iv List of Tables: The page of Final List of SWMU should be not 5 but 4.

PAGE 1 Executive Summary: No summary statement was included for historical background and extent of environmental contamination such as spill and/or release of wastes.

PAGE 11 7TH AND 8TH Lines: 83 08'07'' and 40 05'26'' should be corrected to 83° 08' 07'' and 40° 05'26''.

PAGE 61 Receptors: The population of the City of ^{Dublin}~~Ashland~~ and the source of potable water for the city should be described.

PAGE 62 DESCRIPTIONS OF SOLID WASTE MANAGEMENT UNITS:

Each unit can be complete, as supplemented with its physical condition noticed at the VSI and with the EPA hazardous waste code numbers in "waste managed."

PAGE 77 Summary of Suggested Further Actions:

Even though the SWMUs #5,6 and 7 are marked "yes" for some floor/concrete staining, no specific further action is suggested. The SFA for these can be written "Integrity of the unit is verified. The integrity is impaired, sampling may be warranted."

ASHLAND CHEMICAL INC. - DUBLIN
OHD042311209

PR RECOMMENDATIONS FOR VSI

In addition to VSI objectives previously listed, the following objectives specific to each SWMU should be considered:

1. Underground Storage Tank: This was removed/RCRA closed in 1988, so a quick check for evidence of remaining soil contamination should be sufficient.
2. Drum Storage Pad: Look for evidence of spills/soil contamination particularly in soil immediately adjacent to the pad or through any cracks in the pad.
- 3&4. Aboveground Storage Tanks #8 and #9: Determine exact locations of SWMUs and mark on map. Look for evidence of leaks/spills in areas surrounding tanks.
5. Mixing Container (Blending Unit): Determine exact location(s) where SWMU is used and mark on map. Look for evidence of leaks/spills in areas where container is used.
6. Interim Drum Storage Area(s): Determine exact location(s) of SWMU(s) and mark on map. Look for evidence of spills/contamination in this area(s).

Prepared By: Jeff Reynolds
DERR/CDO

Doc022/8
JR/daw
9/18/90

042311209

PRELIMINARY REVIEW/VISUAL SITE INSPECTION REPORT

Ashland Chemical, Inc.
Research and Development Laboratory
5200 Blazer Parkway
Dublin, Ohio 43017

EPA ID # OHD042311209

for

U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

Prepared by

Ohio Environmental Protection Agency
Central District Office
P.O. Box 2198
Columbus, Ohio 43266-2198

July 30, 1991

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NATURAL RESOURCES

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ATTACHMENTS:

- A. Visual Site Inspection Agenda Letter
- B. Clean Closure Plan for Underground Storage Tank and Ohio EPA Acceptance
- C. Ohio EPA Confirmation of Clean Closure for the Underground Storage Tank
- D. Notice of Deficiency and Letter of Warning (Part B Application)
- E. Letter to Request Withdrawal of Hazardous Waste Facility Permit Application
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I. EXECUTIVE SUMMARY

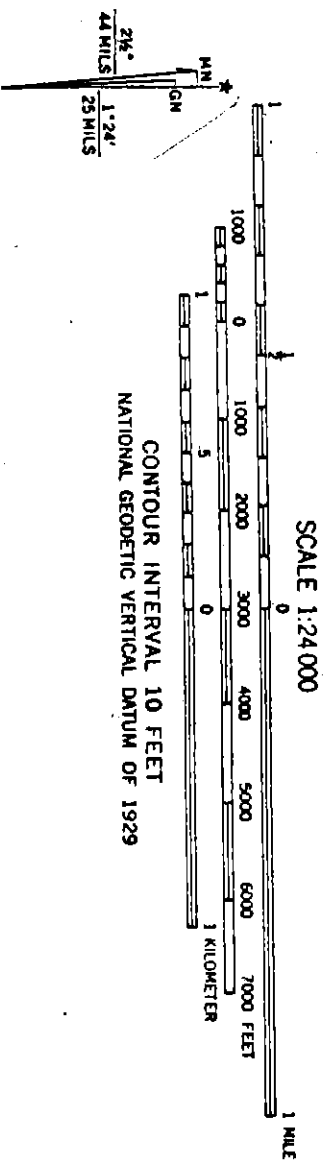
Ashland Chemical Research and Development Laboratory (the facility) is located in the Village of Dublin, a suburb located to the northwest of Columbus, Ohio (see Figure 1, pg. 2). The lab is located next to two other buildings that serve as the administrative headquarters of Ashland Chemical, Inc.

The Ashland Chemical Research and Development (R & D) Laboratory is the main R & D facility for Ashland Chemical, a wholly owned subsidiary of Ashland Oil, Inc. The laboratory is involved in researching foundry products, polyester resins, specialty polymers, adhesives, electronic and laboratory chemicals, industrial chemicals and solvents, and polymers. The facility has in the past also done research in carbon black, petrochemicals, and in areas outside their line of business (Refs. 3 & 7).

Research is done on pilot plant scale as well as in a variety of on-site laboratories. These activities result in the generation of hazardous wastes, non-hazardous wastes, and other solid wastes. All wastes are disposed off-site.

The facility is permitted (interim status) to store hazardous waste on their drum storage pad for more than 90 days. However, they currently store no hazardous wastes longer than 90 days.

During the April 26, 1991 Visual Site Inspection (VSI) for this RCRA Facility Assessment (RFA), Ashland indicated they were



GRID AND 1973 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

Figure 1

Topographic Map of Ashland Chemical and Vicinity

planning on withdrawing their Part B Application. On June 14, 1991, Ohio EPA received a letter stating, "Ashland will not need to pursue a Hazardous Waste Facility Permit for its Dublin operations and is hereby withdrawing its Hazardous Waste Facility Permit application." They also submitted a closure plan for their hazardous waste container storage area (referred to as Drum Storage Pad, SWMU #5, in this report).

Although Ashland is withdrawing their permit, this report was prepared as it otherwise would have been. Ashland has not yet closed their Drum Storage Pad, and even once it is closed, Ashland will still be subject to RCRA Corrective Actions.

The Drum Storage Pad is their only remaining RCRA regulated unit under their Part B Application. Previously, they had a regulated underground storage tank. The tank was removed and RCRA clean-closed in 1988.

The Preliminary Review (PR) for this RFA included a preliminary list of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs). The PR listed six SWMUs and no AOCs. The SWMUs included storage tanks, drum storage areas, and a mixing container. Eight SWMUs and no AOCs were identified following the VSI. The list was generated as a result of the PR, the VSI, and other information obtained from both the facility and the Ohio EPA. The final list of SWMUs is presented in this report as Table 1 (pg. 4).

TABLE 1: FINAL LIST OF SOLID WASTE MANAGEMENT UNITS

<u>Solid Waste Management Unit</u>	<u>RCRA Regulated Hazardous Waste Unit</u>
1. Mixing Unit	Yes*
2. South Bay Waste Management Area	Yes*
3. Aboveground Storage Tank #8	Yes*
4. Aboveground Storage Tank #9	Yes*
5. Drum Storage Pad	Yes**
6. Inside Interim Drum Storage Area	Yes*
7. Outside Interim Drum Storage Area	Yes*
8. Underground Storage Tank	No***

* - Less than 90 day units.

** - Closure Plan Submitted on 6/14/91.

*** - Unit Removed and Closed in 1988.

(Refs. 3, 4, 17, & 22)

Descriptions of each SWMU are located in Section IV of this report. The locations of the SWMUs are illustrated in Figure 2 (pg. 6).

Recommendations concerning the SWMUs are as follows:

No further action is recommended for the Mixing Unit (SWMU #1), the Inside Interim Drum Storage Area (SWMU #6), and the Underground Storage Tank (SWMU #8). The Mixing Unit is a small capacity (100 gallons) mobile container that has not been used for waste since last year. The unit has always been used in the South Bay Waste Management Area (SWMU #2). The Inside Interim Drum Storage Area (SWMU #6) is inside in a room with a concrete floor and stores a minimum (1 or 2 drums) of waste. The Underground Storage Tank (SWMU #8) was removed in 1988 and RCRA clean-closed. No further action is recommended for these three SWMUs.

Testing the integrity of the floor drain system is recommended for the South Bay Waste Management Area (SWMU #2). Also recommended is keeping the plug in the floor drain system except when the system is actually being drained (during the VSI the plug had been out since the floor was cleaned the day before).

Continued annual integrity testing of Aboveground Storage Tanks #8 and #9 (SWMUs #3 and #4) and associated waste transfer lines is recommended. Also a secondary containment system (concrete dike) is recommended for the tank farm (four tanks total, the others contain unused solvent) in which these SWMUs are located.

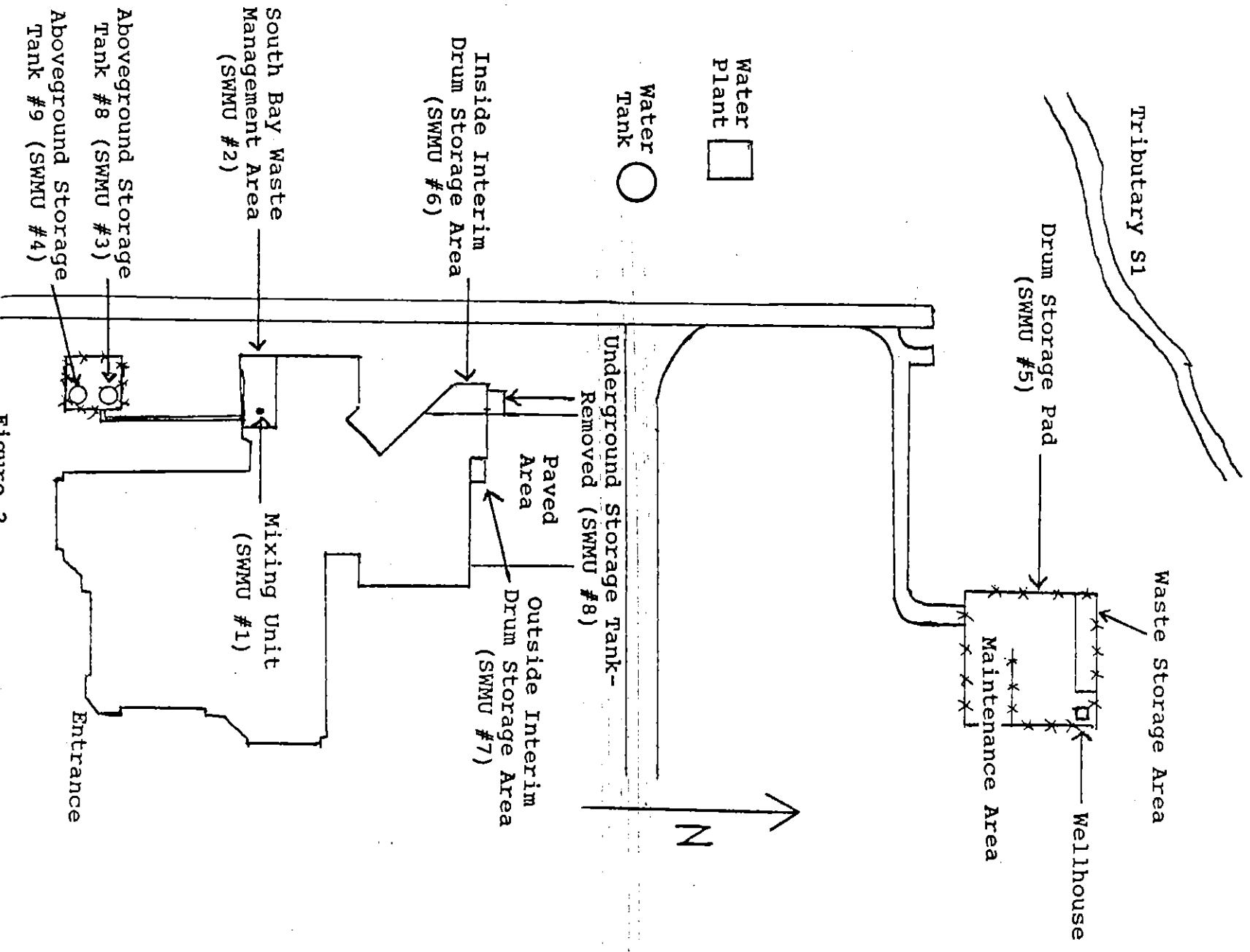


Figure 2

Ashland Chemical Inc.
Research & Development Building

SWMU Locations

Map Not To Scale

The drum storage pad (SWMU #5) should be separated from the water well serving the facility. The well is currently located on the pad, with no dikes, and the water lines run directly under the hazardous waste, solid waste, and chemical storage areas of the pad. This well currently serves all the water needs (both for drinking and production) of the Research and Development Building and the northernmost administration building.

Either the well or the pad should be moved away from the other. Moving the pad may be preferable due to the proximity of the floodplain. Also the pad should be diked as proposed in the Part B Application.

The Outside Interim Drum Storage Area (SWMU #7) should be diked with a secondary containment system (concrete dike). This would avoid runoff resulting from a spill contaminating other outside areas.

This report summarizes information obtained during the PR and the VSI. Subsequent to this section, the report contains an introduction, descriptions of the facility, its processes and wastes, its regulatory/compliance history, its environmental setting, and potential receptors. Also included are descriptions of the SWMUs, a summary of suggested further actions, and the references used in compiling this report.

Provided as attachments are the VSI Agenda Letter, the Clean Closure Plan for the removed Underground Storage Tank (SWMU

#8) and Ohio EPA confirmation of Clean Closure, a Notice of Deficiency letter and follow-up Letter of Warning concerning the Part B Application, and a letter from Ashland requesting to withdraw their Part B Permit Application. Also attached are some area well logs, the VSI summary report, the VSI photograph log, and VSI field notes.

II. INTRODUCTION

This report presents the results of the Preliminary Review/Visual Site Inspection (PR/VSI) phases of a RCRA Facility Assessment (RFA) of Ashland Chemical, Inc. Research and Development Laboratory located in Dublin, Franklin County, Ohio. The facility operates under USEPA I.D. No. OHD042311209.

A PR of existing file material for the Ashland facility was performed during August of 1990. The PR served to identify the need for additional information and to give direction for activities to be conducted during the VSI. The VSI of the facility was conducted on April 26, 1991, as part of the RFA. The objectives of the RFA at Ashland were to:

1. Identify all SWMUs and any AOCs that are located at the facility.
2. Use information obtained from the file review and during the VSI to assess the potential for release of hazardous waste or hazardous constituents from each SWMU or AOC.
3. For each SWMU and AOC, determine what further measures, if any, should be taken to safeguard human health and

the environment from a release (if those measures have not already been taken).

4. Obtain a thorough understanding of the past and present process and waste management operations at Ashland.

The information used in preparing this report was obtained from the following references: the facility's Part A Permit Application, Part B Permit Application; other information in the files of Ohio EPA; information gathered during the VSI; information sent by the facility in response to requests for information unavailable during the VSI; and from phone calls to the facility subsequent to the VSI. A list of references is provided in Section VI.

III. GENERAL DESCRIPTION

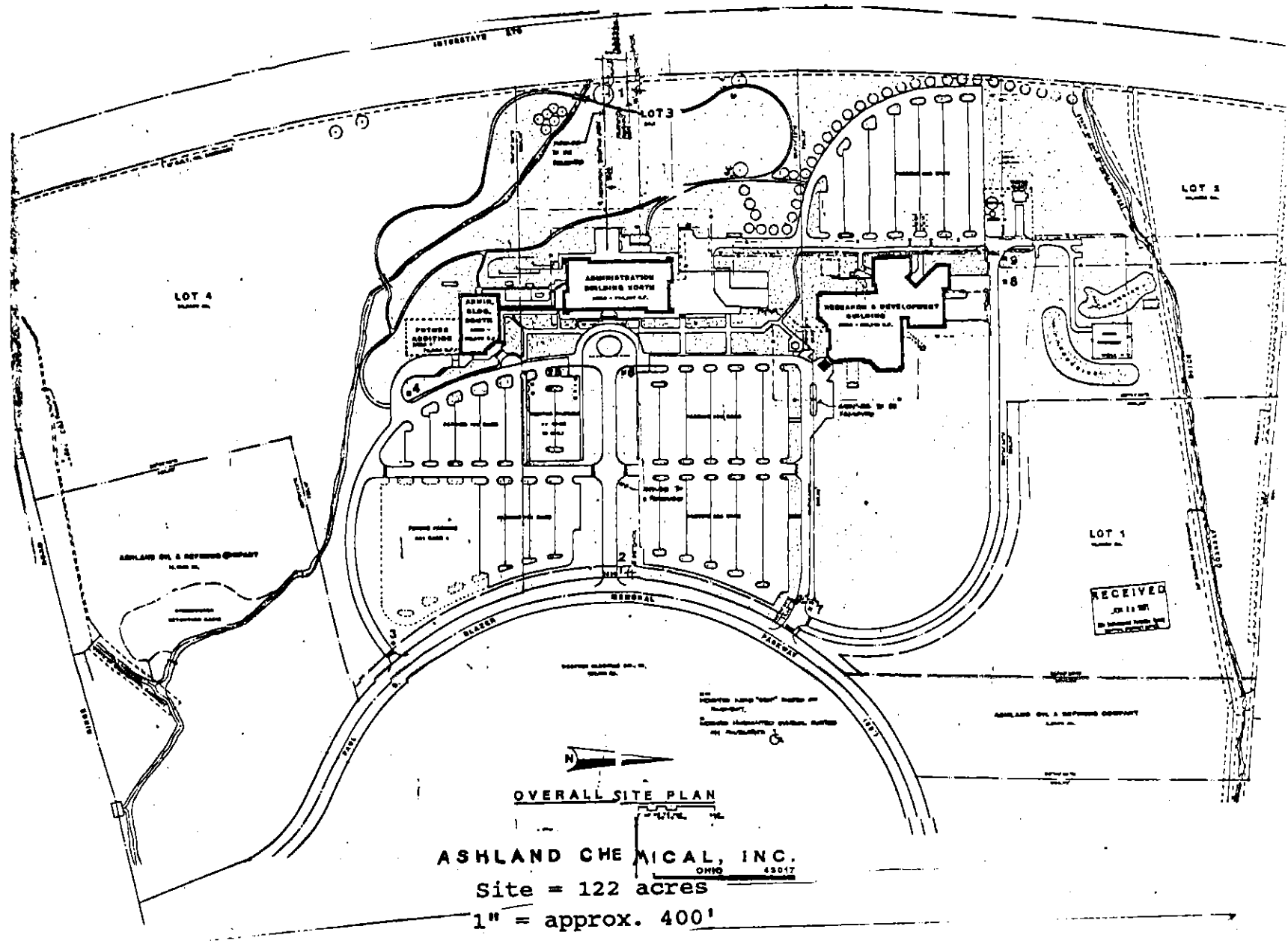
A. FACILITY DESCRIPTION

The Ashland Chemical, Inc. Research and Development Laboratory is a wholly owned subsidiary of Ashland Oil, Inc. This facility is located at 5200 Blazer Parkway in Dublin (Figure 1, pg. 2), a suburb to the northwest of Columbus. The facility lies inside Interstate 270 and south of State Route 161, to the west of downtown Dublin. The R & D Laboratory is located on approximately 122 acres of land at 83 08'07" west longitude and 40 05'26" north latitude. Ashland has been conducting operations at this site since 1971 (Refs. 2, 6, 10, 11, & 17).

As the main research facility and headquarters for Ashland Chemical, Inc., the R & D Laboratory is involved in research in foundry products, polyester resins, specialty polymers, adhesives, electronic and laboratory chemicals, industrial chemicals and solvents, and polymers. The facility has in the past also done research in carbon black, petrochemicals, and in areas outside their line of business (Refs. 3 & 7).

Although they originally applied for a Part B Permit (and are currently operating under interim status for container storage) for storage of hazardous waste reasons, the facility is not currently storing these wastes longer than 90 days (Refs. 7 & 17). On June 14, 1991, Ohio EPA received a letter from the

Figure 3 - Ashland Chemical Inc. Facility Map
Corporate Headquarters and Research & Development Building



facility (see Attachment E) stating, "Ashland will not need to pursue a Hazardous Waste Facility Permit for its Dublin operations and is hereby withdrawing its Hazardous Waste Facility Permit application." They also submitted the closure plan for their hazardous waste container storage area (Drum Storage Pad, SWMU #5), which is their only operating RCRA regulated unit under their Part B Application.

Wastes at this facility are primarily generated from pilot plants and from laboratories at the facility. The laboratory wastes are accumulated in the Interim Drum Storage Areas (SWMUs #6 & #7) by type and by the department generating the waste. The pilot plants generate two or three drums at a time. These wastes primarily consist of wash solvent from the cleaning of pilot plant reactors and waste resins.

Full drums of waste (from the pilot plant or accumulated by labs in the Interim Drum Storage Areas) are then taken to the South Bay Waste Management Area (SWMU #2). Most wastes are pumped from drums into the Aboveground Storage Tanks. There are permanent waste lines connecting the South Bay Waste Management Area with the Tank Farm to the south (see figure 4, pg. 15). Wastes that are not pumpable or are incompatible (e.g. polymeric isocyanates) are left in drums and taken to the Drum Storage Pad (Refs. 9 & 17).

Tank contents are shipped to Systech, by Metropolitan Environmental Inc., and burned/recycled in a cement kiln for energy recovery. Drums are taken to Ross Incineration Services, by Ross Transportation Services, for individual drum incineration (see Waste Management Operations, Section III. C.1.).

File information indicates no history of spills or releases at the facility. VSI interviews concur with this information. Ashland personnel know of no significant releases to the environment (Refs. 17, 18, & 30). The individual responsible for safety and the management of hazardous waste activities at the facility is:

Mike Mullier

Manager, Research Building Services

(614) 889-3272

An illustration of the layout of current plant operations is shown in Figures 4, 5, and 6 (on pgs. 15-17).

Figure 4 - Layout of Current Operations, First Floor

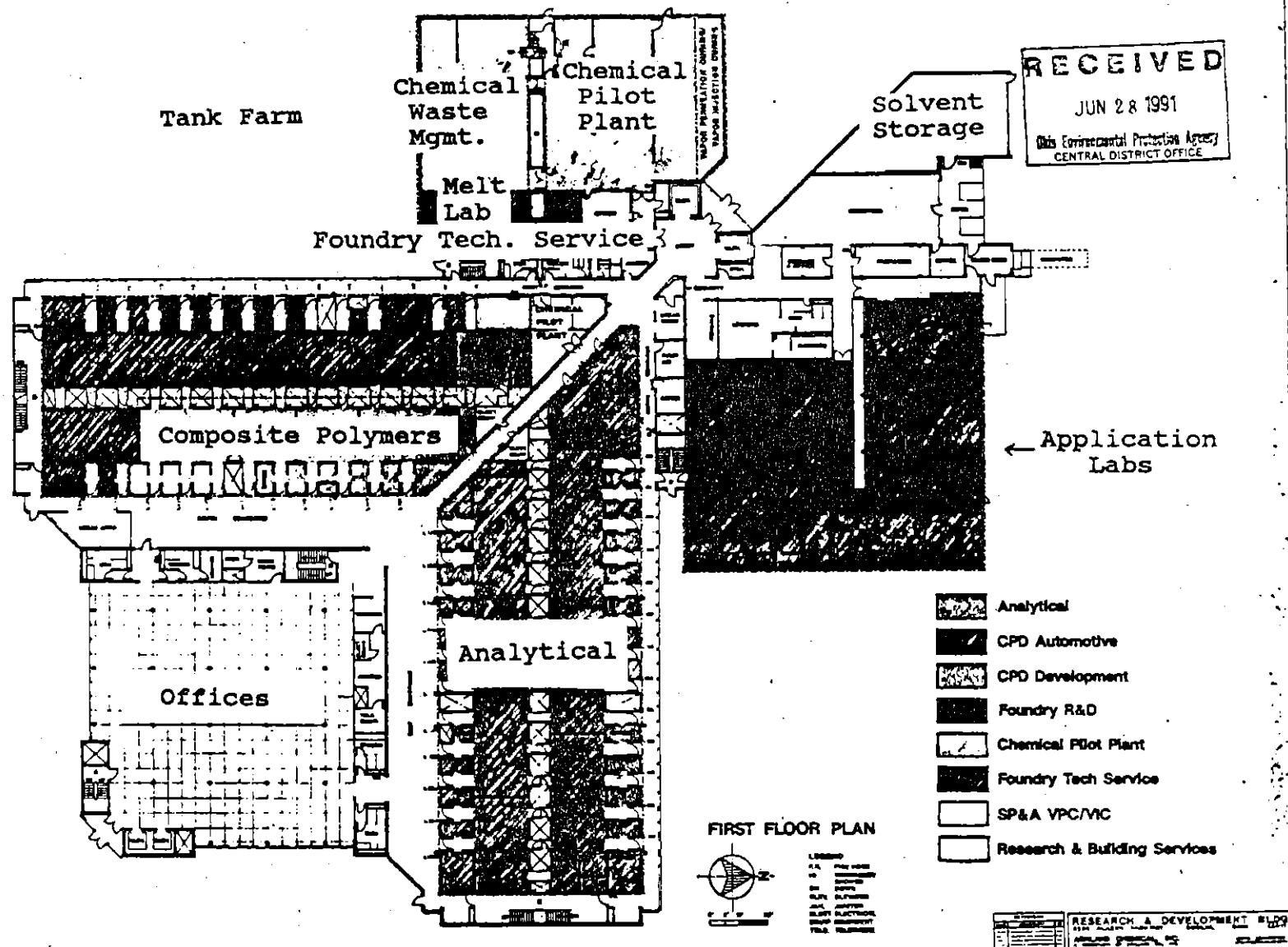


Figure 5 - Layout of Current Operations, Second Floor

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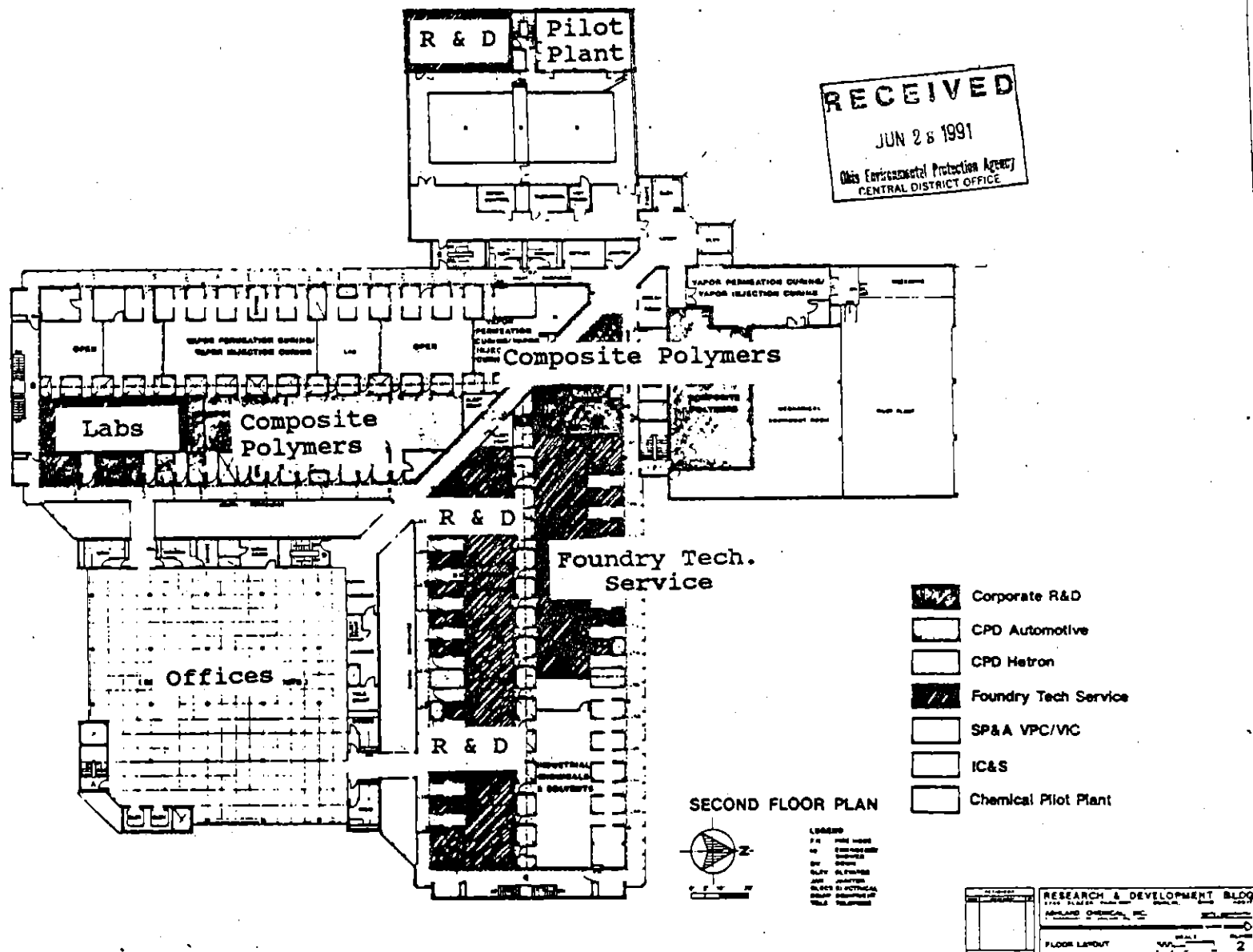
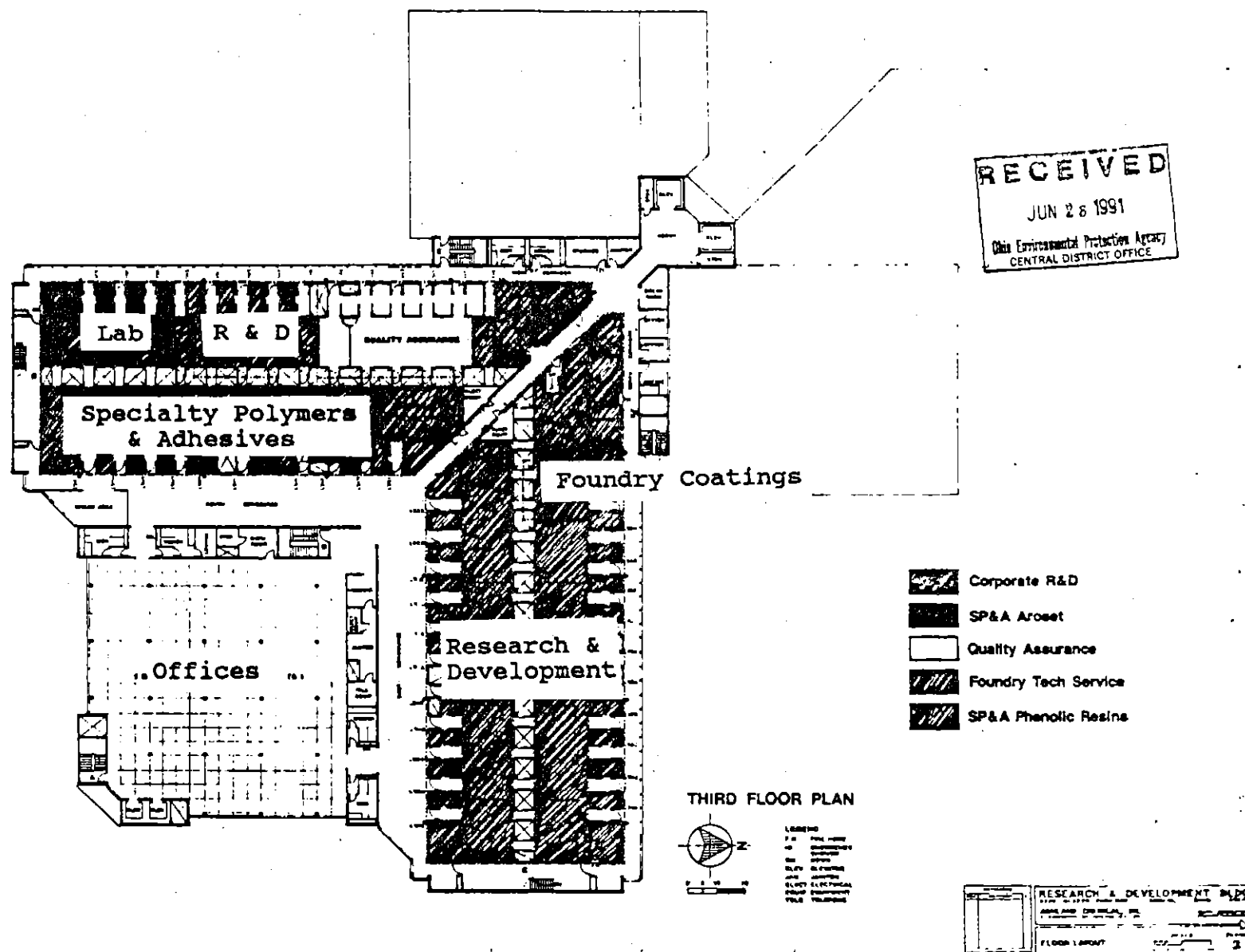


Figure 6 - Layout of Current Operations, Third Floor

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B. Process Description

As the main research facility for Ashland Chemical, Inc., the R & D Laboratory is involved in research in foundry products, polyester resins, specialty polymers, adhesives, electronic and laboratory chemicals, industrial chemicals and solvents, and polymers. The facility has in the past also done research in carbon black, petrochemicals, and in areas outside their line of business (Refs. 3 & 7).

As a R & D facility, Ashland is involved in all these areas of research on a relatively small scale, either in their pilot plants or their many laboratories. Processes vary widely between the different divisions within Ashland and also change over time. This variation has lead to a large number of different wastes produced over the last ten years as shown in Table 2 (pgs. 19 & 20). However, the volumes produced by many of those wastes may have been relatively low (Refs. 1 & 17).

Wastes produced are identified and tracked through the use of internal Waste Profile Sheets (WPS, see Figures 7 & 8, pgs. 21 & 22) and a computerized operating record. The WPSs serve as a record for a variety of information about the waste. One WPS is used per drum of waste. Information recorded on the sheet is transferred to a computer that is used to track waste through storage and shipping off site (Refs. 6 & 17).

TABLE 2: HAZARDOUS WASTES GENERATED

<u>HAZ. WASTE CODE</u>	<u>CHEMICAL(S)</u>	<u>HAZARD</u>
D001	Waste Ignitables	Charac./Ignitable
D002	Waste Corrosives	Charac./Corrosive
D003	Waste Reactives	Charac./Reactive
D004*	Arsenic	Charac./Toxic
D005*	Barium salts	Charac./Toxic
D006*	Cadmium salts	Charac./Toxic
D007*	Chromium salts	Charac./Toxic
D008*	Lead	Charac./Toxic
D009*	Mercury	Charac./Toxic
D011*	Silver salts	Charac./Toxic
D018	Benzene	Charac./Toxic
D019	Carbon Tetrachloride	Charac./Toxic
D022	Chloroform	Charac./Toxic
D035	Methyl Ethyl Ketone	Charac./Toxic
D038	Pyridine	Charac./Toxic
D040	Trichloroethylene	Charac./Toxic
F001	Spent Halogenated Solvents	Toxic
F002	Spent Halogenated Solvents	Toxic
F003	Spent Non-Halogenated Solvents	Ignitable
F005	Spent Non-Halogenated Solvents	Toxic, Ignitable
F007	Spent Cyanide Salts	Toxic, Reactive

(table continued on next page)

TABLE 2: HAZARDOUS WASTES GENERATED (CONT.)

P028*	Benzyl chloride	Toxic-Acute
P105*	Sodium Azide	Toxic-Acute
U002	Acetone	Ignitable
U003	Acetonitrile	Toxic
U009	Acrylonitrile	Toxic
U023	Benzotrichloride	Corrosive, Toxic, and Reactive
U031	n-Butyl Alcohol	Ignitable
U112	Ethyl Acetate	Ignitable
U113	Ethyl Acrylate	Ignitable
U122	Formaldehyde	Toxic
U127	Hexachlorobenzene	Toxic
U147	2,5- Furandione	Toxic
U154	Methanol	Ignitable
U159	Methyl Ethyl Ketone	Toxic, Ignitable
U161	Methyl Isobutyl Ketone	Ignitable
U188	Phenol	Toxic
U196	Pyridine	Toxic
U220	Toluene	Toxic
U223	Toluene Diisocyanate	Tox./Reactive
U239	Xylene	Ignitable

* = Wastes no longer generated by the facility
(Refs. 1, 2, 3, 7, & 22)

ASHLAND CHEMICAL, INC.
LABORATORY WASTE FROM DUBLIN R&D LABS
WASTE PROFILE SHEET (WPS)

FOR R&D BUILDING SERVICES USE

THIS WASTE PROFILE SHEET IS NEEDED TO ASSIST R&D BUILDING SERVICES IN DISPOSING OF CHEMICAL WASTE AT A MINIMUM COST TO YOU AND TO MEET GOVERNMENTAL REGULATIONS. A WPS IS NEEDED FOR EACH 55 GALLON DRUM.

- Container storage (SOI) is on permitted pad.
- Containers are 55 gallon drums.
- Treatment (mixing with solvents) is in tank 8 (2000 gallon) and/or tank 9 (3000 gallon).
- All treatment is for less than 90 days

WPS
<input type="checkbox"/> Hazardous <input type="checkbox"/> Non-Regulated
EPA Hazardous ID#:
Date to Tanks 8 or 9:
Date Shipped:
Manifest #:
Vendor:
Net Weight:

YOUR NAME (PRINT): _____ PHONE EXT. _____

Group: Arimax Foundry T.S. Research Bldg. Serv.
IC & S Pilot Plant Research & Dev.
Foundry R&D Polyester SP&A
Maintenance VPC/VIC

Date drum filled: _____ Gross Weight: _____ Flash Point: _____ °F

Content ☐ Liquid ☐ Very Viscous ☐ Solid ☐ Solid/Liquid Mix

Chemical Composition	Percent	Trade Name, Exp. Prod #, Etc.
a. _____	_____	_____
b. _____	_____	_____
c. _____	_____	_____
d. _____	_____	_____
e. _____	_____	_____
f. _____	_____	_____
g. _____	_____	_____
Total	100%	_____

(Use additional page if necessary)

Does your waste contain any Toxicity Characteristic Constituents listed on the back of this page at or above the regulatory level? ☐ Yes ☐ No. If yes, please check back of page.

This is to certify that the chemical composition and information given above is accurate and complete.

Signature (Must be signed by Chemist/Chem. Eng.) _____ Date _____

Completed forms must be returned to J.W. Boone or M.E. Muller so that a WPS number can be assigned. You will be given a dated hazardous or non-regulated label which you must apply to the side of the drum. In addition, the WPS number must be spray-painted on the side of the drum. When this is done, the drum must be immediately brought to the Chemical Waste Management area.

APRIL 1991

Figure 7 - Waste Profile Sheet, Front

TCLP CONSTITUENTS AND REGULATORY LEVELS

<u>COMPOUNDS</u>	<u>REG. LEVEL (mg/l)</u>	<u>EPA HW #</u>	<u>PLEASE CHECK</u>
ORGANICS			
Benzene	0.5	D018	_____
Carbon tetrachloride	0.5	D019	_____
Chlorobenzene	100.0	D021	_____
Chloroform	6.0	D022	_____
o-Cresol*	200.0	D023	_____
m-Cresol*	200.0	D024	_____
p-Cresol*	200.0	D025	_____
Cresol*	200.0	D026	_____
1,4-dichlorobenzene	7.5	D027	_____
1,2-dichloroethane	0.5	D028	_____
1,1-dichloroethylene	0.7	D029	_____
2,4-dinitrotoluene	0.13	D030	_____
Hexachlorobenzene	0.13	D032	_____
Hexachloro-1,3-butadiene	0.5	D033	_____
Hexachloroethane	3.0	D034	_____
Methyl-ethyl-ketone	200.0	D035	_____
Nitrobenzene	2.0	D036	_____
Pentachlorophenol	100.0	D037	_____
Pyridine	5.0	D038	_____
Tetrachloroethylene	0.7	D039	_____
Trichloroethylene	0.5	D040	_____
2,4,5-trichlorophenol	400.0	D041	_____
2,4,6-trichlorophenol	2.0	D042	_____
Vinyl chloride	0.2	D043	_____
METALS			
Arsenic	5.0	D004	_____
Barium	100.0	D005	_____
Cadmium	1.0	D006	_____
Chromium	5.0	D007	_____
Lead	5.0	D008	_____
Mercury	0.2	D009	_____
Selenium	1.0	D010	_____
Silver	5.0	D011	_____
PESTICIDES			
Chlordane	0.03	D020	_____
Endrin	0.02	D012	_____
Heptachlor(+hydroxide)	0.008	D031	_____
Lindane	0.4	D013	_____
Methoxychlor	10.0	D014	_____
Toxaphene	0.5	D015	_____
2,4-D	10.0	D016	_____
2,4,5-TP (Silver)	1.0	D017	_____

* If o-, m-, & p-cresol cannot be differentiated, the total cresol concentration is used.

Figure 8 - Waste Profile Sheet, Back

Hazardous waste drums are marked with both an Ashland identification number (on the top) and a Ross Incineration identification number (on the side). These numbers are all tracked using the WPSs and the computer waste tracking system (Ref. 17).

Hazardous Waste Identification numbers for each drum are primarily assigned using knowledge of the waste. However, in some instances, and pursuant to their Waste Analysis Plan, it is necessary for Ashland to test a waste for a characteristic (i.e. ignitability, or a Toxicity Characteristic Leaching Procedure analyte or compound). To aid in knowing when this may be necessary, the department generating each drum of waste must, on the back of the corresponding WPS (see Figure 8, pg. 22), check off if any Toxicity Characteristic constituents are present in the waste (Refs. 6, 7, & 17).

C. Waste Management Operations

1. Hazardous Waste

a. Generation

During research at the facility, various chemicals and by-products are made or used that must ultimately be sent off site for treatment, storage, or disposal.

Hazardous wastes for the facility are largely resins (largest waste volumes) and solvents. Wastes are generated by both pilot plants and laboratories at the facility.

Most pilot plant wastes consist of wash solvent from the cleaning of reactors and waste resins. The pilot plants tend to generate two or three drums at a time, whereas, lab wastes are accumulated more slowly. The labs accumulate waste first in safety cans (2 1/2 to 5 gallons) in the individual labs, then these are transferred to drums. There are several drums being filled at any one time, with different drums for different waste types or different divisions of Ashland. These drums are accumulated in the two Interim Drum Storage Areas (SWMUs #6 & #7). When full they are moved to the South Bay Waste Management Area (Refs. 7 & 17).

b. Tracking

When drums are filled and declared a waste, an internal Waste Profile Sheet (WPS, see Figure 7, pg. 21) is filled out. These sheets contain information on waste characteristics, the department generating the waste, the date declared a waste, chemical composition, any potential TCLP constituents in the waste (recorded on the back of the WPS, see Figure 8, pg. 22), and the EPA Hazardous Waste ID number. Eventually, these sheets also record the date pumped to the Aboveground Storage Tanks (if applicable), the date shipped, the manifest number, and the vendor that took the waste.

Most drums can be assigned appropriate EPA Hazardous Waste ID numbers using knowledge of the drums' contents. Sometimes, however, the exact characteristics of the waste may be uncertain. In these instances, the drum may need to be tested to determine proper Hazardous Waste ID numbers. For example, a flashpoint test may need to be run (in-house), or a sample may need to be sent to an outside lab for TCLP evaluation.

The WPSs are filled out one sheet per one drum only. The information from the sheets is transferred to a

computer. Ashland uses the computer to organize the wastes by date generated and to avoid storing them for over 90 days. They currently do not store any wastes over 90 days and on June 13, 1991 sent a letter (Attachment E) to the Ohio EPA indicating that they wish to close the Drum Storage Pad (their only RCRA regulated unit) and are no longer interested in pursuing their Part B Permit (Refs. 7, 8, 9, & 17).

c. Storage

Most of the facility's wastes (70 - 80 percent) are stored on-site in the Aboveground Storage Tanks. Wastes that are too viscous to be pumped to the tanks or are incompatible (e.g. polymeric isocyanates) are stored in drums (on the Drum Storage Pad, SWMU #5).

Ashland keeps track of these drums with their own number spray painted on the tops of the drums and Ross Incineration's numbers on the sides of the drums. When the contents of a drum are pumped to one of the Aboveground Storage Tanks, the empty drums are sent to Columbus Steel Drum for cleaning/reconditioning. No acute hazardous wastes (which would require a solvent triple-rinse of the container) are used by Ashland.

The Aboveground Storage Tanks (SWMUs #3 & #4) are emptied when shipping wastes. These tanks are cleaned out annually (by a contractor) and then inspected by an outside engineering firm. They check the tanks for integrity, thickness (no corrosion), etc. They also inspect the associated waste lines leading from the South Bay Waste Management Area (SWMU #2) to the tanks. The wastes stored in the tank are all compatible with each other and with the tank (Refs. 6, 7, 9, 17, 35, & 36).

d. Disposal

Wastes from the Aboveground Storage Tanks are sent to Systech. These wastes have a high BTU value and are burned/recycled in a cement kiln for energy recovery. This requires a minimum of 5,000 BTU. Ashland's waste is usually 10,000 to 15,000 BTU due to the resin compounds.

Drums that are not pumpable (to the Aboveground Storage Tanks) or are incompatible (e.g. polymeric isocyanates) are sent to Ross Incineration for individual drum incineration. Small quantities of unused chemicals leftover from laboratory work are sometimes shipped to universities able to use the reagents. This

alternative to disposal benefits both Ashland and the universities (Refs. 7, 17, & 23).

Wastes are transported to Systech by Metropolitan Environmental, Inc. Drummed wastes are transported to Ross Incineration Services by Ross Transportation Services (Ref. 11).

e. Reduction

Over the last few years Ashland has been focusing on waste reduction. They have been emphasizing the concept of, "Reduce, Reuse, and Recycle." Within the context of this source reduction and waste management program, waste is defined as anything that does not end up in a finished product (i.e. solvent evaporation, cooling water, electricity, steam, etc.).

Ashland implements this program in a variety of ways. When purchasing laboratory reagents, they buy only what they need, even if the container costs almost as much as a larger size. This way they end up with less to dispose of at the end of a project.

They also estimate the waste they expect to generate

before they begin a project. They try to anticipate by-products, potential waste disposal problems (both on the pilot plant scale and, eventually, at the actual plant), etc. This evaluation process may alter or even end a project before it begins. Ashland feels this has been difficult to do on the pilot plant scale, but they think it's been successful.

The success of the program can be judged both by the amount of waste produced and by the associated disposal costs. The facility produced about 900 drums of hazardous waste in 1988, about 500 in 1989, and approximately 325 in 1990. During this time period, disposal costs were reduced from about \$200,000 per year to approximately \$60,000.

Perhaps the main factor in this successful reduction of waste was a change involving in-house accounting procedures. Ashland started charging each division within the facility approximately three times their actual waste disposal costs. Profits of individual divisions affect managers' bonuses, etc. They have instituted this practice in order to bring to their employees' attention the seriousness of the matter. They have found this to be an effective incentive for waste reduction (Refs. 11 & 17).

2. Other Wastes

a. PCB Wastes

Shortly before the VSI, Ashland had removed capacitors containing PCBs from their old (metal melting) furnace. This furnace had been located in the Melt Lab of the Foundry Technical Services area on the first floor (see Figure 4, pg. 15). It had been on the west wall of that lab until they replaced it with a new one (which does not contain PCBs). These capacitors were then shipped out on May 30, 1991 to Ensco Inc. in Arizona (Refs. 7, 10, & 17).

b. Other Non-Hazardous Wastes

Other non-hazardous chemical wastes are stored in 55 gallon drums on the northern portion of the Drum Storage Pad. These wastes are shipped primarily to Ross Incineration. They have also been sent in the past to Trade Waste Incineration, Ashland Chemical, Inc., I C & S Division, and Thermalkem, Inc. (Refs. 17 & 23).

D. Regulatory History

The regulatory history for Ashland Chemical, Inc. R & D Laboratory has been assembled from information in the files from three environmental programs:

1. The Resource Conservation and Recovery Act Program
2. The Air Pollution Control Program
3. The Water Pollution Control Program

1. RCRA Regulatory History

In a letter dated December 1, 1981, Ashland received a Hazardous Waste Facility Installation and Operation Permit (Part A Permit) from the Hazardous Waste Facility Board (HWFB) that allowed them to operate, pursuant to the permit, under Ohio's hazardous waste facility interim standards chapters.

The permit allowed for the storage of hazardous waste in containers and an 8,000 gallon underground storage tank. An administrative revision to the permit was approved by the HWFB on September 24, 1982 and an additional change was approved on September 29, 1982. In a letter dated December 6, 1989, Ashland submitted a revised Part A Permit to incorporate a facility name change and to delete the Underground Storage Tank (SWMU #8). Discrepancies were

noted concerning the revised permit and it was never approved (Ref. 5).

Ashland submitted a Part B Application to the U.S. EPA on February 27, 1987 and to Ohio EPA on July 2, 1987. In a letter dated May 15, 1990, Ohio EPA provided Ashland with comments on the application.

On January 5, 1988, Ashland submitted a closure plan for the 8,000 gallon underground storage tank. On April 29, 1988, Ohio EPA disapproved the plan. A modified closure plan was submitted to Ohio EPA on June 2, 1988. On June 30, 1988, Ohio EPA approved the closure plan with modifications. U.S. EPA approved the plan on August 2, 1988. Ashland conducted closure activities and in a letter dated June 13, 1989 submitted certification of closure for the tank. In a letter dated August 16, 1989, Ohio EPA agreed that closure activities for the tank were conducted in accordance with the approved plan (see Attachments B and C).

In correspondence received June 14, 1991, Ashland formally requested that the Part B Application be withdrawn and provided Ohio EPA with a final closure plan for the container storage area, the only remaining permitted RCRA unit (Refs. 4, 5, 9, & 22).

2. Air Pollution Control Program

Ashland has the following types of air contaminant sources on file with the Ohio EPA:

Table 3: Ashland Air Contaminant Sources

Source No.	Description	Date App. Rec'd.	Type or Status	Effect. Date	Revis. Date
B001	Gas-Oil Fired Boiler	9/11/72	PTO	2/1/73	2/22/77
B001	Gas-Oil Fired Boiler	9/11/72	Registration	5/30/77	
B002	Gas-Oil Fired Boiler	9/11/72	PTO	2/1/73	2/22/77
B002	Gas-Oil Fired Boiler	9/11/72	Registration	5/30/77	
P001	Reactor and Bag Filters	9/11/72	PTO	2/1/73	2/22/77 Deleted-9/7/89
P001	Reactor and Bag Filters	9/11/72	Registration	5/30/77	Deleted-9/7/89
P002	Exhaust Hoods	9/11/72	PTO	9/25/73	2/22/77, 3/13/80, 2/11/83
P002	Exhaust Hoods	9/11/72	Registration	5/31/83	
P003	Reactors, Condensers, Receivers	9/11/72	PTO	2/1/73	2/22/77 3/13/80 2/11/83
P003	Reactors, Condensers, Receivers	9/11/72	Registration	5/31/83	
K002	Spray Booth	1/11/78	Registration	10/6/89	
K003	Spray Booth	1/11/78	Registration	10/6/89	
P005	Curing Oven	1/11/78	Registration	10/6/89	

Source No.	Description	Date App. Rec'd.	Type or Status	Effect. Date	Revis. Date
P006	Curing Oven	1/11/78	Registration	10/6/89	
T001	Solvent Blend Tank-3,000 gal.	1/11/78	Registration	10/6/89	
T002	Solvent Blend Tank-2,000 gal.	1/11/78	Registration	10/6/89	
T003	Hazardous Waste Tank-2,000 gal.	1/11/78	Registration	10/6/89	
T004	Hazardous Waste Tank-3,000 gal.	1/11/78	Registration	10/6/89	
K001	Paint Spray Booth	7/26/82	Registration	2/10/84	
K001	Paint Spray Booth	6/25/82	PTI	10/28/82	
R001	Spray Booth	9/11/72	PTO	2/1/73	2/22/77 Withdrawn 3/13/80
P004	Spray Dryer	10/25/79	PTO	8/1/80	Delete 9/7/84
P004	Spray Dryer	10/25/79	Registration	8/2/83	Delete 9/7/84
P004	Spray Dryer	9/28/79	PTI	3/13/80	Delete 9/7/84

PTI= Permit to Install

PTO= Permit to Operate

(Ref. 18)

3. Water Pollution Control Program

Ashland submitted an application for a National Pollutant Discharge Elimination System (NPDES) permit on June 5, 1973. On November 27, 1974, Ohio EPA issued a proposed NPDES permit and on December 23, 1974, Ashland requested an adjudication hearing. Upon settlement of the issues involved, Ohio EPA issued the NPDES Permit on December 31, 1975.

The permit allowed for the combined average discharge of 120,000 gallons per day from one outfall to the Cosgrove Ditch (Tributary S1 in Section III. F. 2.). The NPDES permit required monitoring for pH, BOD₅, total suspended solids, fecal coliform, residual chlorine, dissolved oxygen, and ammonia. In a letter dated July 5, 1978, Ashland informed Ohio EPA that, as of June 15, 1978, the discharge under the NPDES permit was discontinued and Ashland was discharging to the Dublin Municipal Sewer System.

On September 28, 1979, Ashland submitted applications for a Permit to Install (PTI) and a Permit to Operate (PTO) for a spray dryer to the Ohio EPA, Division of Air Pollution Control. The operation of the proposed dryer included the discharge of wastewaters from cleaning the unit to the sanitary sewer. Neither the city of Columbus or Ohio EPA, Division of Water Pollution Control objected to the discharge. The permit for the unit was deleted in 1984 (Refs. 20 & 28).

E. COMPLIANCE HISTORY

Provided below (Table 4, pgs. 37-40) is a compliance history for the Ashland facility that includes all violations discovered during Ohio EPA and USEPA RCRA inspections of the facility and Ohio EPA reviews of Ashland's financial records. The RTC column indicates the date on which the violation was documented as having returned to compliance. Escalation (ESC) refers to any form of enforcement action that has been initiated as a result of a violation. No escalation to enforcement has occurred at Ashland.

Ashland's compliance history has been assembled from information contained in the Ohio EPA, Division of Solid and Hazardous Waste Management (DSHWM) RCRA files. A USEPA Land Disposal Restriction Compliance Evaluation and a Generator (TSDF) inspection are done annually. Financial Record Reviews are also performed (Refs. 22 & 27).

Table 4: SUMMARY OF COMPLIANCE HISTORY

DATE OF INSPECTION: August 30, 1982			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
	No violations cited.		
DATE OF INSPECTION: August 29, 1983			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
	No violations cited.		
DATE OF INSPECTION: August 28, 1984			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
	No violations cited.		
DATE OF INSPECTION: July 25, 1985			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
OAC 3745-65-14 (B) (2) (a) (b)	Failure to comply with security requirements.	12/6/85	None
DATE OF INSPECTION: August 21, 1985 (Financial Record Review)			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
	No violations cited.		
DATE OF INSPECTION: March 20, 1986 (Financial Record Review)			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
	No violations cited.		

TABLE 4: SUMMARY OF COMPLIANCE HISTORY (cont.)

DATE OF INSPECTION: September 10, 1986			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
OAC 3745-65-35	Failure to maintain adequate aisle space.	12/16/86	None
OAC 3745-66-73 (A)	Failure to store hazardous waste in containers of good condition.	12/16/86	None
OAC 3745-65-73	Failure to maintain adequate operating record for facility.	12/16/86	None
DATE OF INSPECTION: August 4, 1987			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
40 CFR 265.195 OAC 3745-66-95	Failure to conduct daily tank system inspections.	9/21/87	None
DATE OF INSPECTION: June 29 and 30, 1988			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
OAC 3745-52-20	Failure to comply with manifest requirements.	9/14/88	None
OAC 3745-65-52	Failure to have adequate contingency plan.	9/14/88	None
OAC 3745-65-73	Failure to maintain adequate operating record for facility.	8/26/88	None
OAC 3745-52-34	Failure to label drums with words "Hazardous Waste" and date of accumulation.	8/26/88	None
DATE OF INSPECTION: June 29 and 30, 1988 (USEPA Land Disposal Restriction Compliance Evaluation)			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
40 CFR 268.7	Failure to complete notification forms for shipments of hazardous F-solvent wastes.	5/10/89	None

TABLE 4: SUMMARY OF COMPLIANCE HISTORY (cont.)

DATE OF INSPECTION: February 3, 1989 (Financial Record Review)			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
OAC 3745-66-43	Failure to comply with financial	3/8/89	None
OAC 3745-66-47	assurance wording requirements.		
DATE OF INSPECTION: July 11 and 12, 1989			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
OAC 3745-50-40* (E)	Failure to obtain a permit for on-site treatment activity.	1/30/91	None
OAC 3745-52-20	Failure to comply with manifest requirements.	8/17/89	None
DATE OF INSPECTION: July 11 and 12, 1989 (Land Disposal Restriction Compliance Evaluation)			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
	No violations cited.		
DATE OF INSPECTION: July 19, 20, and 26, 1990			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
OAC 3745-50-40* (E)	Failure to obtain a permit for on-site treatment activity.	1/30/91	None
OAC 3745-65-54	Failure to amend contingency plan to address personnel changes.	1/30/91	None
DATE OF INSPECTION: July 19, 20, and 26, 1990 (USEPA Land Disposal Restriction Compliance Evaluation)			
<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
40 CFR 265.13	Failure to maintain waste analysis plan which addresses		
	40 CFR Part 268.		

TABLE 4: SUMMARY OF COMPLIANCE HISTORY (cont.)

DATE OF INSPECTION: March 7, 1991
(Financial Record Review)

<u>RULE</u>	<u>DESCRIPTION OF VIOLATION</u>	<u>RTC</u>	<u>ESC</u>
	No violations cited.		
	* - 1989 and 1990 supposed treatment violations later determined by Ashland and Ohio EPA to be blending and not treatment.		
	RTC - Date Returned To Compliance		
	ESC - Escalated Enforcement Actions		

F. ENVIRONMENTAL SETTING

1. METEOROLOGY

Columbus, Ohio (of which Dublin is a nearby suburb) has a continental climate characterized by moderate extremes of temperature and precipitation. The annual temperature averages 51.6° F (11° C) and annual precipitation averages 36.97 inches (94 cm).

The summers are warm and humid. July is the hottest month with an average daily maximum temperature of 84.4° F (29° C). The highest temperature ever recorded in Columbus was 102° F (39° C) during June 1944.

The winters are cold with an average of five days with subzero temperatures per year. January is the coldest month with an average daily minimum temperature of 19.4° F (-7° C). The lowest temperature ever recorded in Columbus was -19° F (-28° C).

Precipitation in Columbus peaks during the summer months with both June and July averaging 4.01 inches (10.2 cm). October is the driest month with an average rainfall of 1.91 inches (4.9 cm). The maximum precipitation in one 24 hour period was 4.86 inches (12.3 cm) during September 1979.

Winds in Columbus are generally light to calm blowing less than

13 mph (21 km/hr) more than 76 percent of the time. This is particularly true during late evening and early morning hours in the summer when the only breeze present is often due to air drainage only. Stronger winds are most commonly from the west, southwest, or south. See wind rose for Columbus in Figure 9, (pg. 43).

Severe weather in Columbus is not uncommon. There is an average of over 40 thunderstorms a year. These may occur during any month but most often from May through August. The city is also susceptible to tornadoes, which are most likely to occur between April 1 and July 31 (Refs. 13 & 14).

2. Flood Plains and Surface Waters

Three tributaries of the Scioto River run across or near Ashland property. Cramer Ditch is within 1,500 feet of the facility to the south. This conjoins with Tributary C1 at the property's southern edge. Tributary C1 passes within 200 feet of the southernmost Administration Building and within 800 feet of the R & D Building (see Figures 10 and 11, pgs. 44 and 45). Tributary C1's 100 year floodplain overlaps part of Ashland's property but does not reach the R & D Building (500 year floodplain not given).

Tributary S1 (Cosgrove Ditch) crosses the northern edge of the

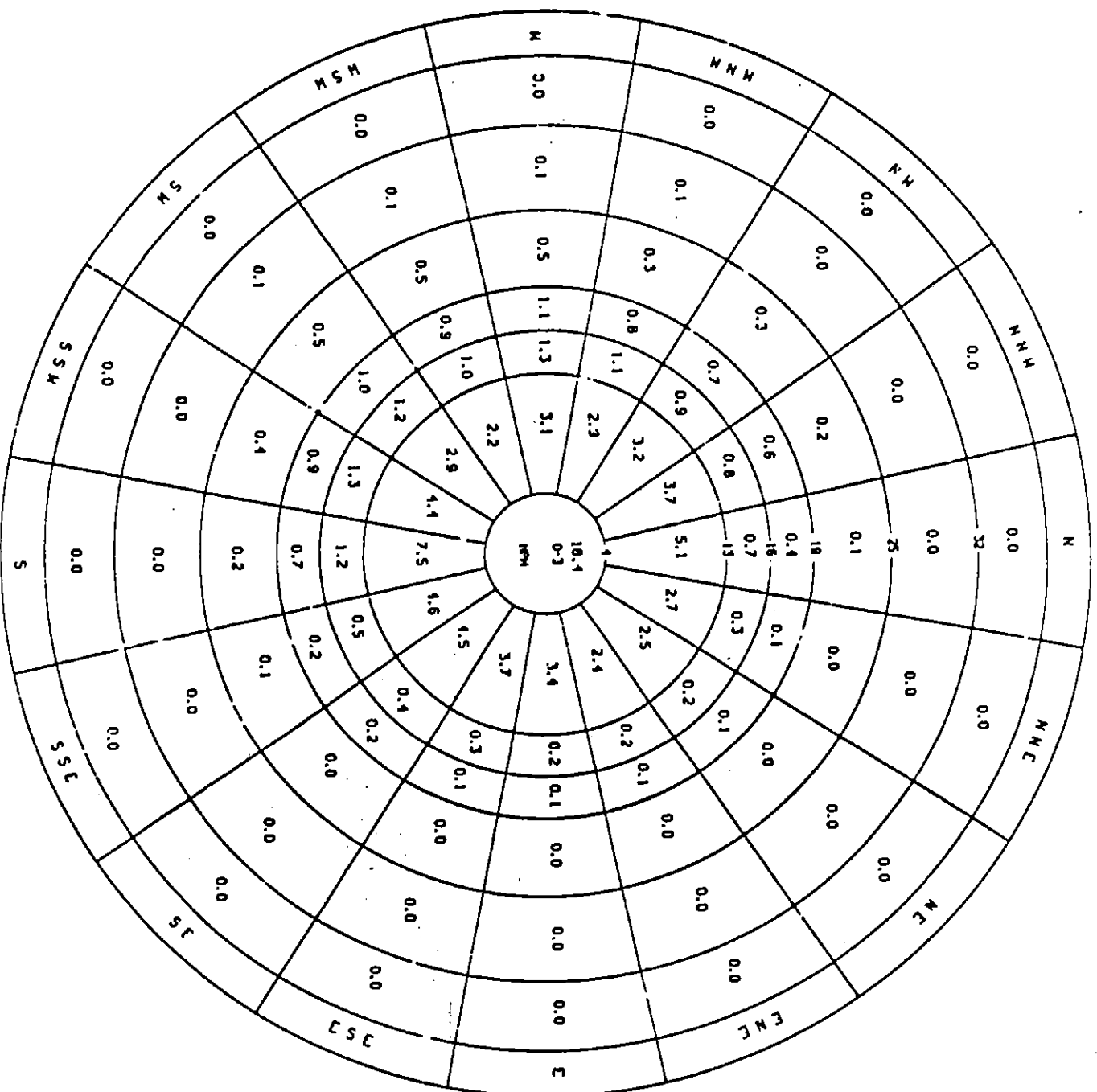


Figure 9 - Wind Rose for Columbus, Ohio

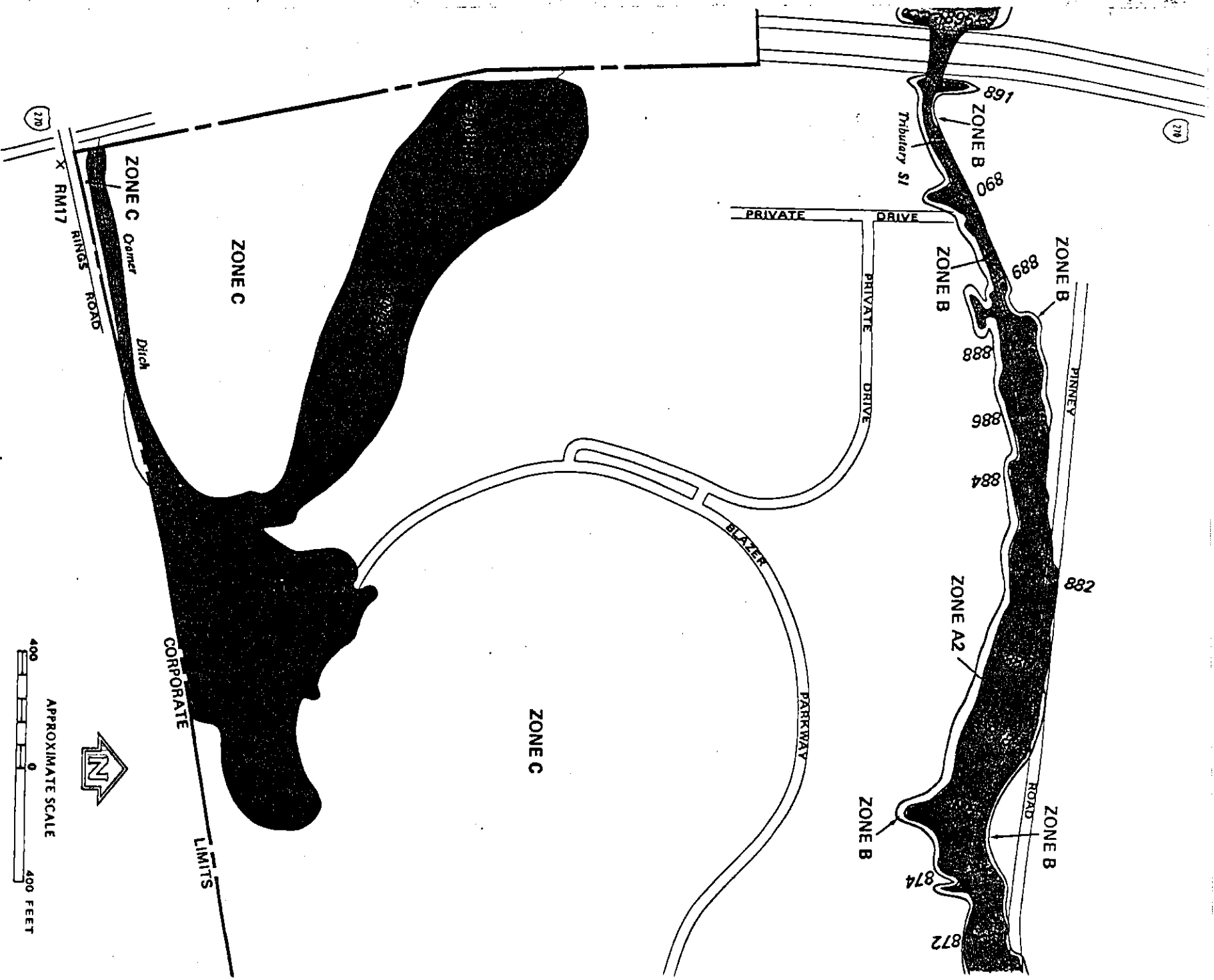


Figure 10 - Flood Plain Map for Ashland Vicinity

KEY TO MAP

500-Year Flood Boundary _____
 100-Year Flood Boundary _____
 Zone Designations*



100-Year Flood Boundary _____
 500-Year Flood Boundary _____

Base Flood Elevation Line
 With Elevation in Feet**

513

Base Flood Elevation in Feet
 Where Uniform Within Zone**

(EL 987)

Elevation Reference Mark

RM7X

Zone D Boundary _____

River Mile

•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Certain areas not in the Special Flood Hazard Areas may be protected by flood control structures.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

For adjoining panels, see separately printed Map Index.

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

VILLAGE OF
 DUBLIN,
 OHIO

FRANKLIN, DELAWARE, AND
 UNION COUNTIES

PANEL 6 OF 8

(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
 390673 0006 D

MAP REVISED:
 OCTOBER 17, 1989



Federal Emergency Management Agency

Figure 11 - Flood Plain Map Key

property. Its floodplain (especially the 500 year) probably overlaps with the Drum Storage Pad (SWMU #5). All three tributaries drain to the Scioto River approximately one mile to the east (Refs. 10, 12, 32, & 33).

3. Soils

Soils at the Ashland facility are mainly Crosby silt loam (Cra) with some Kokomo silty clay loam (Ko). The Crosby silt loam is a nearly level, deep, somewhat poorly drained soil and the Kokomo silty clay loam is also a nearly level, deep but very poorly drained soil. The Crosby silt loam is typically found on narrow to broad upland areas while the Kokomo silty clay loam receives runoff from adjacent higher soils and is subject to ponding (Ref. 31).

Permeability in the Crosby silt loam is slow and available water capacity in the subsoil is moderate. The Kokomo silty clay loam is a moderately slow permeable soil with a high available water capacity. The seasonal high water table in the Crosby silt loam is between depths of 12 and 36 inches late in winter, spring and in other extended wet periods. The seasonal high water table of the Kokomo silty clay loam is found near the surface during the same periods.

Reaction in the Crosby silt loam ranges from medium acid in the upper part of the subsoil to mildly alkaline in the lower part. The Kokomo silty clay loam is dominantly neutral throughout (Ref. 31). A soils map of Ashland and vicinity is shown on Figure 12 (pg. 48).

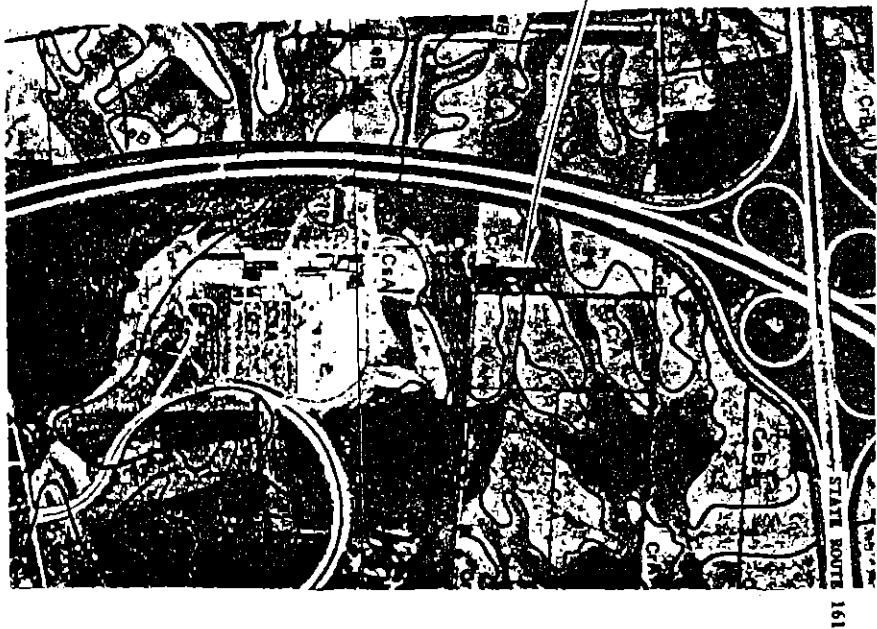
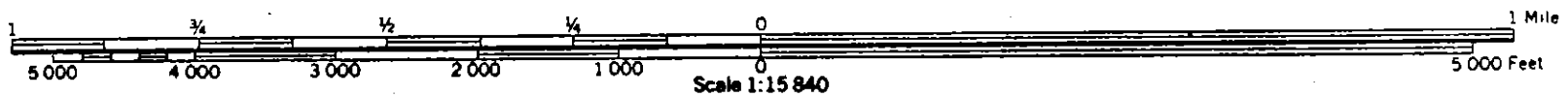
4. Topography

The Ashland facility is located on a relatively flat plain with slight dissection of the plain through stream erosion to the north and south of the facility (Ref. 32 & 33). The elevation across the facility is between 890 and 895 feet above mean sea level. A topographic map of Ashland and vicinity is shown on Figure 1 (pg. 2).

5. Geology/Hydrogeology

The Ashland facility is located on a ground moraine south of the Powell end moraine in the Till Plains section of the Central Lowlands physiographic province.

Well logs from the Ohio Department of Natural Resources (ODNR) were reviewed for 75 wells within a one-mile radius of Ashland. Copies of all well logs reviewed for this evaluation are presented in Attachment F. Their locations are shown on Figure 13 (pg. 49).



Cra - Crosby Silt Loam
Ko - Kokomo Silty Clay Loam

Figure 12 - Soil Map for Ashland Vicinity

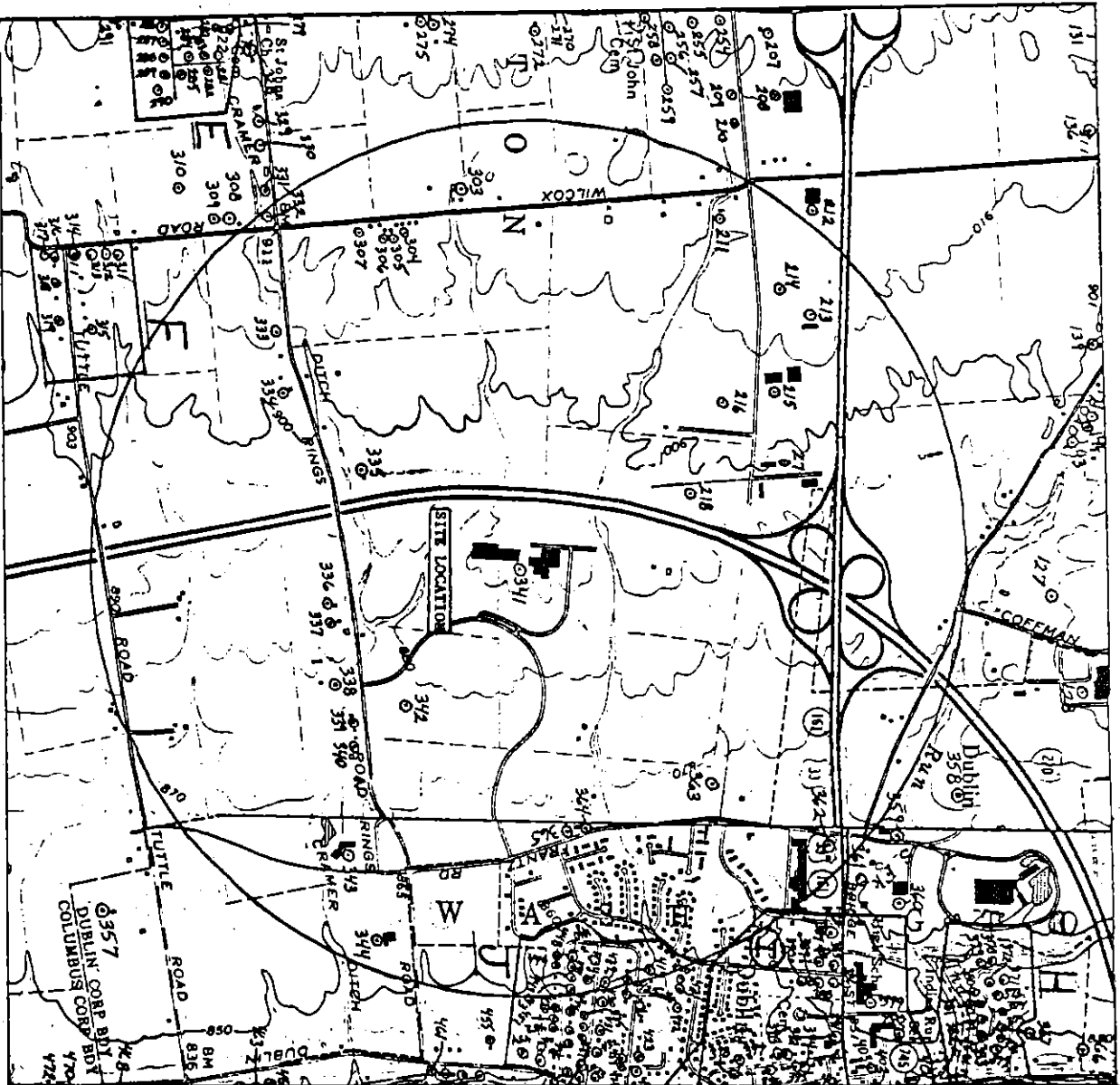


Figure 13 - Well Locations within One-Mile of Ashland
(Well Logs are Located in Attachment F)

To the west of Ashland, the dominant regional geologic feature is a deep buried valley that disrupts the general continuity of the limestone bedrock surface in Washington Township (Ref. 15). The buried valley trends to the southwest through the northwest corner of Franklin County and extends into Madison County. Well logs from the area indicate the buried valley is filled with approximately 100 feet of glacial deposits, predominantly a clay-rich till. The base of the buried valley is within the limestone bedrock described later in this section. A geologic cross-section showing the buried valley is shown on Figure 14 (pg. 51).

The well log for the Ashland facility indicates unconsolidated deposits consisting of glacial till were encountered from the ground surface to a depth of 57 feet. Clay and boulders were encountered to a depth of 18 feet. Clay and gravel were encountered from a depth of 18 to 57 feet.

The logs indicate till in the vicinity of Ashland deepens from east to west. Depth of the till ranges from approximately 7 feet deep east of Frantz Road, approximately 50 feet deep underlying the Ashland facility and approximately 90 feet deep west of Wilcox Road.

The ODNr well logs indicate a sand and gravel aquifer at a depth of approximately 45 to 55 feet below the ground surface. The

TABLE 5: Stratigraphic Nomenclature and Formation Characteristics in the Ashland Vicinity

System or Series	Group or Formation	Character of Material	Water-bearing Characteristics
Quaternary			
Devonian	Recent	Clay, silt and alluvium deposited on flood plains of principal valleys. Relatively thick layers of sand and gravel interbedded with thin layers of clay. Thin to thick moraine deposits consisting of clayey till interbedded with lenses of sand and gravel.	Usually a poor source for water, owing to the absence of coarse materials. Industrial ground-water supplies of more than 200 gpm may be developed. Farm and domestic supplies are developed from permeable zones.
	Pleistocene	Till, a heterogeneous mixture of clay, sand, and gravel with stringers of sand and gravel above the bedrock. Hard, dense, carbonaceous shale, grading into clay shale with limestone concretions. Thin layered, shaly limestone.	Not usually considered as a water-bearing source yet isolated aquifers yield domestic supplies. Not a dependable source of water.
	Ohio		
	Olenetangy		
	Delaware		
Columbus		Fine to coarsely crystalline dolomitic limestone.	Fair to excellent source depending on the location.
	Base Island	Massive to thin bedded dolomite.	Dependable source of ground water for entire basin. Farm, domestic, and industrial supplies are available.

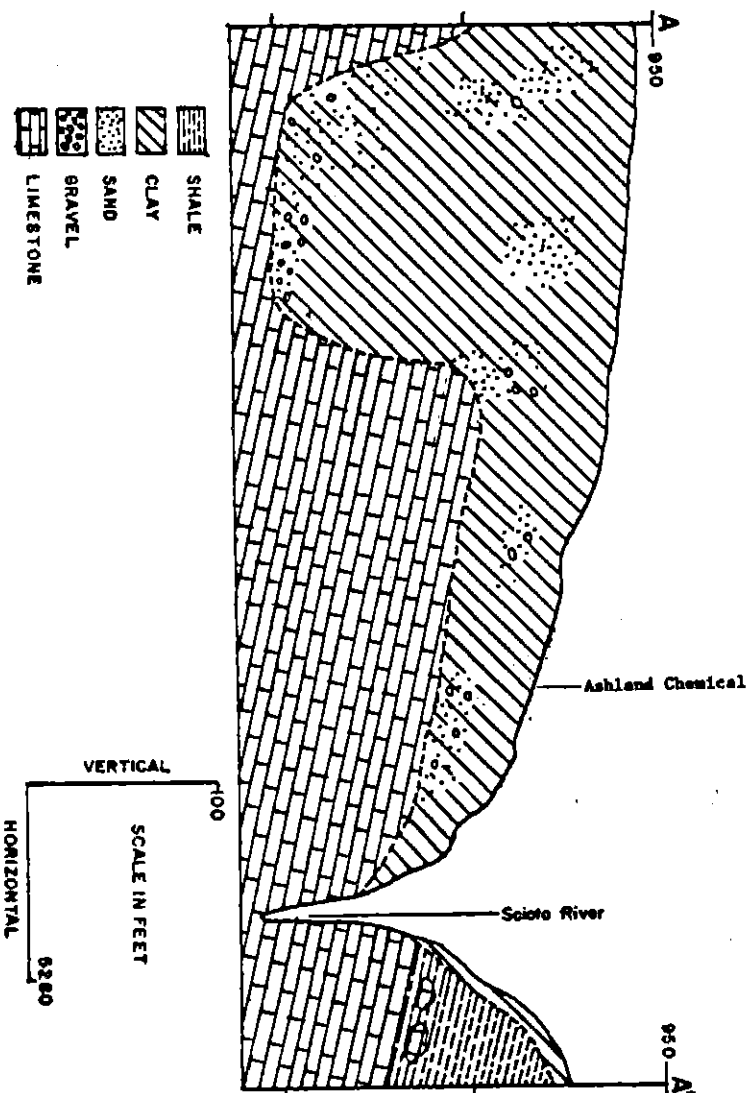


Figure 14 - Generalized Cross-Section of the Ashland Vicinity
(Ref. 15)

sand and gravel aquifer underlies the vicinity of Ashland and is approximately located below the area bounded by State Route 161 to the north, Frantz Road to the east, Rings Road to the south and Wilcox Road to the west. Thirteen wells within a one-mile radius of Ashland are screened in sand and gravel.

The ODNR well logs also indicate sand and gravel deposits both above and below the sand and gravel aquifer in the vicinity of Ashland. Comparisons of well logs show very little correlation between these apparently discontinuous deposits of sand and gravel.

Six well logs (numbers 212, 216, 303, 331, 334, and 337) in the vicinity of Ashland indicate sand and/or gravel directly overlying the limestone bedrock aquifer. Hydraulic interconnection between the sand and gravel deposits and the sand and gravel aquifer and the limestone bedrock aquifer is possible. The extent of inter-connection is unknown. Well number 337 encountered the sand and gravel aquifer from a depth of 12 to 20 feet and a discontinuous sand layer from a depth of 32 to 41 feet. The sand and gravel/limestone bedrock interface is at a depth of 41 feet. Figure 15 (pg. 53) shows the geology encountered by the well in log 337.

Sixty-two of the 75 well logs evaluated show wells completed in

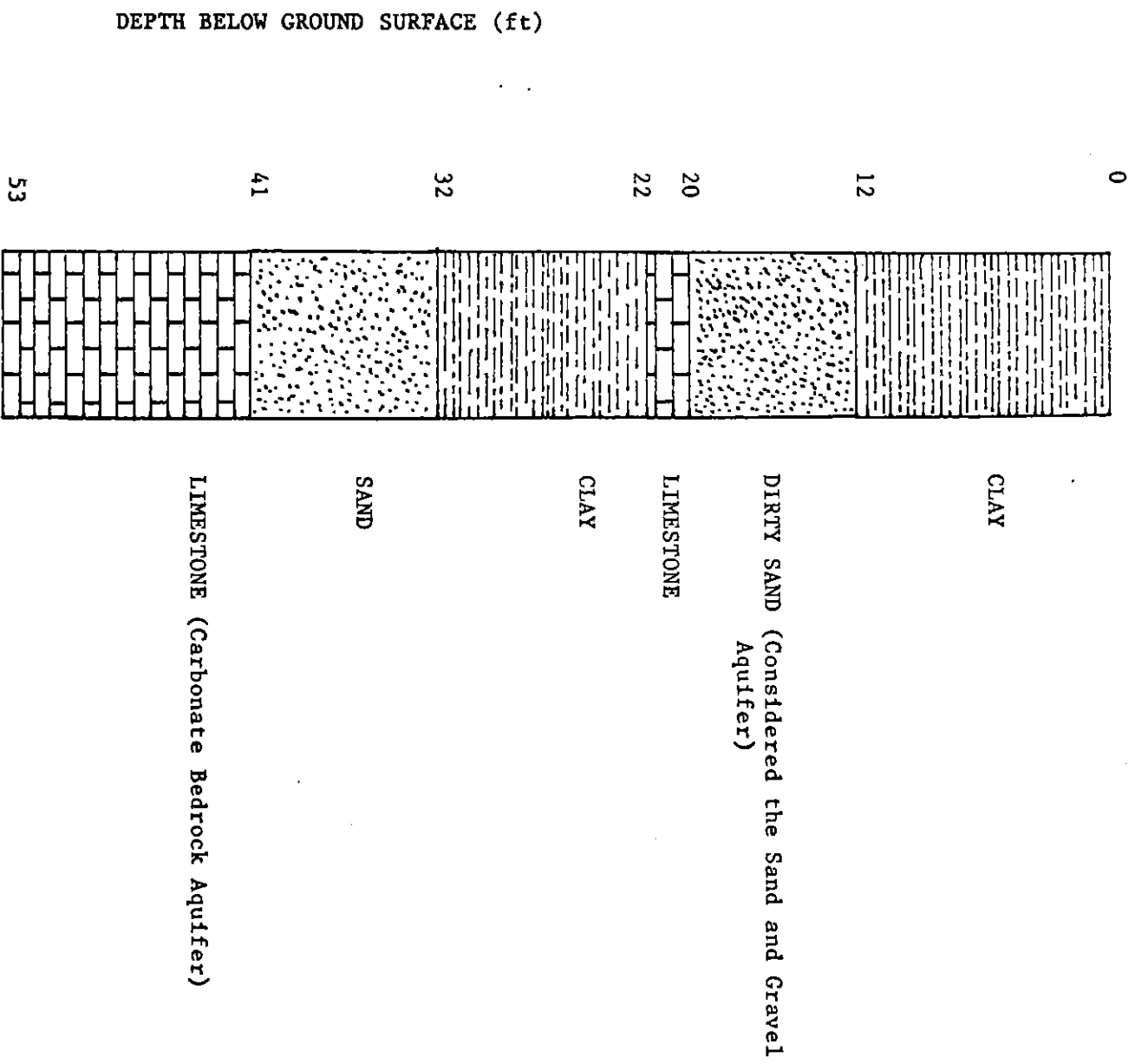
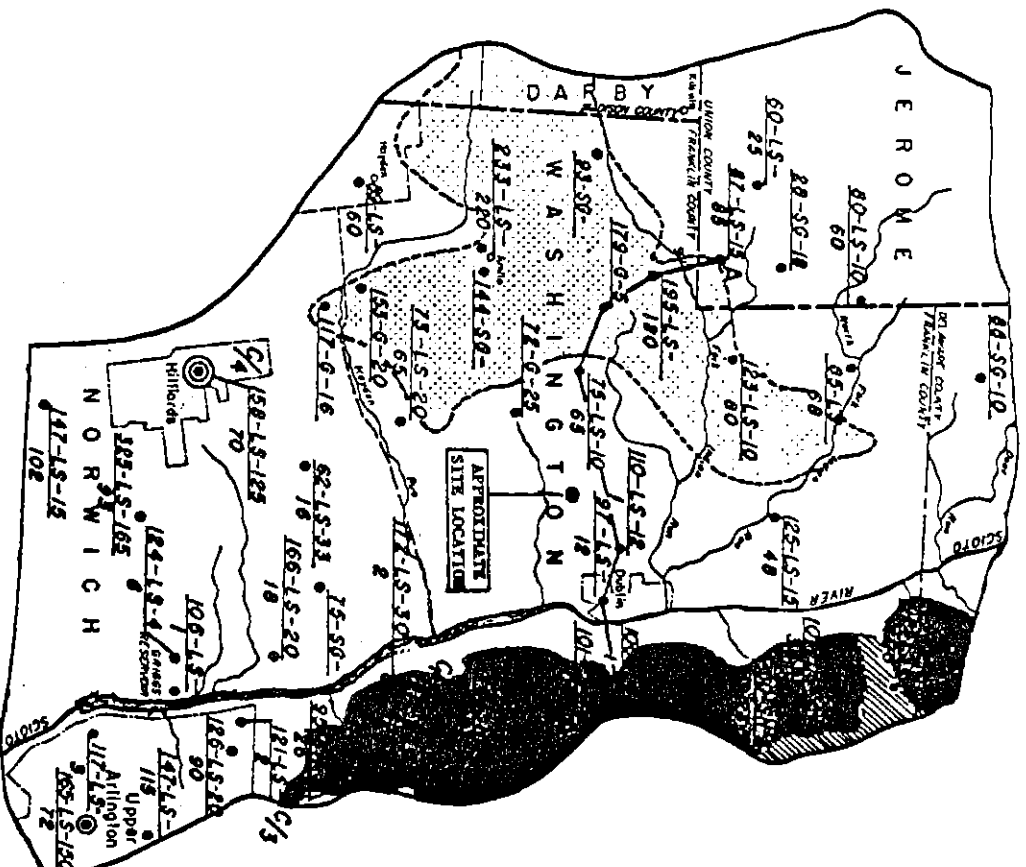


Figure 15 - Stratigraphic Column of Well Log 337
(Well Logs are Located in Attachment F)

the Devonian limestone bedrock, which is considered the principal source of ground water in the vicinity of Ashland. A ground water resources map of Ashland and vicinity is shown on Figure 16 (pg. 55).

The Ashland well log indicates the consolidated formations encountered below the site are comprised of the Devonian system of limestone bedrock found in Central Ohio (Ref. 16). Table 5 (pg. 51) presents a generalized stratigraphic sequence of unconsolidated deposits and bedrock, including physical characteristics and water-bearing characteristics, in the vicinity of Ashland. The limestone bedrock encountered at a depth of 57 feet may be the Ohio and Olentangy Group which overlies the Delaware Limestone. The Delaware Limestone is known as a thin layered, shaly limestone. The Ashland well log describes the second bedrock unit encountered as a limestone and shale unit from a depth of 87 to 98 feet; this may correlate with the Delaware Limestone. This well log describes the last formation encountered, limestone, from a depth of 98 to 155 feet. The Columbus Limestone, described as the most dependable formation for ground water within the Devonian system (Ref. 16), stratigraphically underlies the Delaware Formation and appears to be the last, and deepest, formation encountered by the Ashland well.

Well logs indicate that the limestone bedrock underlies the



limestone aquifer. Although relatively thick layers of sand, sand and gravel are encountered above the bedrock, wells are developed in the limestone bedrock. Yields of more than 450 gallons per minute have been reported, yet the chemical content may deter a specific industrial use.

Clayey till deposits, which till remnant buried drainage channels, are as much as 220 feet thick. Yields from the thin interbedded lenses of sand and gravel are as much as 5 to 10 gallons per minute. However, much greater yields are assured in the underlying limestone formations.

Wells developed in the thick glacial materials deposited above shale or limestone bedrock, yield adequate farm and domestic supplies. Industrial ground-water supplies are developed in the limestone beneath the shale, yet, high percentage of mineralization may deter its use.

Relatively thin glacial drift composed basically of clayey till, overlying shale, and ranging from 2 to 35 feet thick. Limited quantities of ground water are developed; dug wells and cisterns are often necessary to supplement water needs. Limestone beneath the shale yields industrial supplies, however, quality is a deterrent for its use.

Figure 16 - Ground Water Resources of Ashland Vicinity

vicinity of Ashland at depths of approximately 7 feet along Frantz Road to the east of the facility ranging to depths in excess of 80 feet west of Interstate 270.

The Ashland well log indicates the well is screened in the Devonian limestone bedrock, considered a fair to excellent source of groundwater depending on the location (Ref. 16). A 24 hour pump test was run at the Ashland Chemical well at a rate of 350 gpm. The resultant drawdown from the pump test was 31 feet. The pumping rate and drawdown of the pump test result in a specific capacity of 11.3 gpm/ft for the well. The specific capacity was used to estimate the transmissivity of the limestone bedrock aquifer, in this case the transmissivity is estimated to be in excess of 10,000 gallons per day per foot, adequate for industrial, municipal, or irrigation purposes.

No information was available for an evaluation of ground water flow direction at the time of this report. The limestone bedrock underlying the site is believed to dip to the east, as shown on Figure 14 (pg. 51), towards the Scioto River. The Scioto River is considered a possible discharge location of ground water from the vicinity of Ashland, resulting in a regional ground water flow direction to the east. This easterly ground water flow direction may be influenced by the streams bounding the site to the north and south resulting in flow components to the northeast or southeast.

6. Aquifer Contamination Potential

The shallow depth of the sand and gravel aquifer underlying the vicinity of Ashland makes it and the underlying limestone bedrock aquifer vulnerable to contamination by a release from the facility. At least six wells, as noted previously, and possibly other wells (Ashland well log # 351637 and well log 365) indicated there may be a hydraulic inter-connection with the sand and/or gravel units directly overlying the limestone bedrock aquifer. Any contaminant release from the facility could migrate both horizontally and vertically through the sand and gravel aquifer and sand and/or gravel units directly overlying the limestone bedrock aquifer which could result in contamination of the limestone bedrock aquifer.

7. Ground Water Monitoring

The Ohio EPA, Division of Ground Water has sampled the Ashland well on several occasions. The sampling was done as part of an ambient sampling program to evaluate general ground water quality within the limestone bedrock aquifer in this area. Chemical analytical results are presented in Table 6 (pg. 58).

Table 7 and the accompanying Figure 17 (pg. 59) present partial ground water chemical analyses and show the location of four wells screened in bedrock in the vicinity of Ashland (Ref. 16).

TABLE 6: Results of Ashland Groundwater Sampling

	7/22/86	3/21/89	11/7/89	4/24/90	5/3/91
Total Alkalinity (mg/L)	381	336	---	348	349
Ammonia, Nitrogen (mg/L)	0.31	0.27	0.33	0.31	0.32
Arsenic, Total (mg/L)	---	0.018	0.018	0.017	0.016
Cadmium, Total (mg/L)	---	<0.0002	<0.0002	<0.0002	<0.0002
Calcium, Total (mg/L)	99.5	106	105	102	107
Chemical Oxygen Demand (mg/L)	<20	<20	<20	<20	<10
Chloride (mg/L)	6	8	8	8	12
Chromium, Total (mg/L)	---	<0.03	<0.03	<0.03	<0.030
Copper, Total (mg/L)	---	<0.01	<0.01	<0.01	<0.010
Fecal Coliform (#/100 mL)	---	<10	<10	<10	<10
Iron Total (mg/L)	1.25	1.23	1.21	1.26	1.31
Lead, Total (mg/L)	<0.002	<0.002	<0.002	<0.002	<0.002
Magnesium, Total (mg/L)	42.8	38	37	39	39
Manganese, Total (mg/L)	---	0.035	0.035	0.035	0.035
Nitrate/Nitrite (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.1
Phenolics (mg/L)	---	<0.02	<0.02	<0.02	<0.010
Phosphorus, Total (mg/L)	---	0.06	0.05	<0.05	<0.05
Potassium, Total (mg/L)	---	1.7	1.6	1.7	1.8
Total Filterable Residue (mg/L)	---	555	598	---	538
Sodium, Total (mg/L)	54	15	15	15	14
Sulfate (mg/L)	108	120	130	---	115
Total Organic Carbon (mg/L)	---	<5	<5	<5	<5
Zinc, Total (mg/L)	---	<0.01	<0.01	<0.01	<0.010

TABLE 7: Ashland Vicinity Groundwater Analysis

Well Number	C-1	C-2	C-3	C-4
Depth (ft.)	107	211	121	158
Water-bearing formation	Limestone	Limestone	Limestone	Limestone
Iron (Fe)	4.5	.59	6.	0.7
Chloride (Cl)	3.7	11.	2.5	4.
Dissolved solids	2390.	595.	269.	948.
Total hardness	1880.	317.	244.	658.
pH	6.9	7.2	7.4	7.4
Hydrogen sulfide (H ₂ S)	.3	1.7	----	----

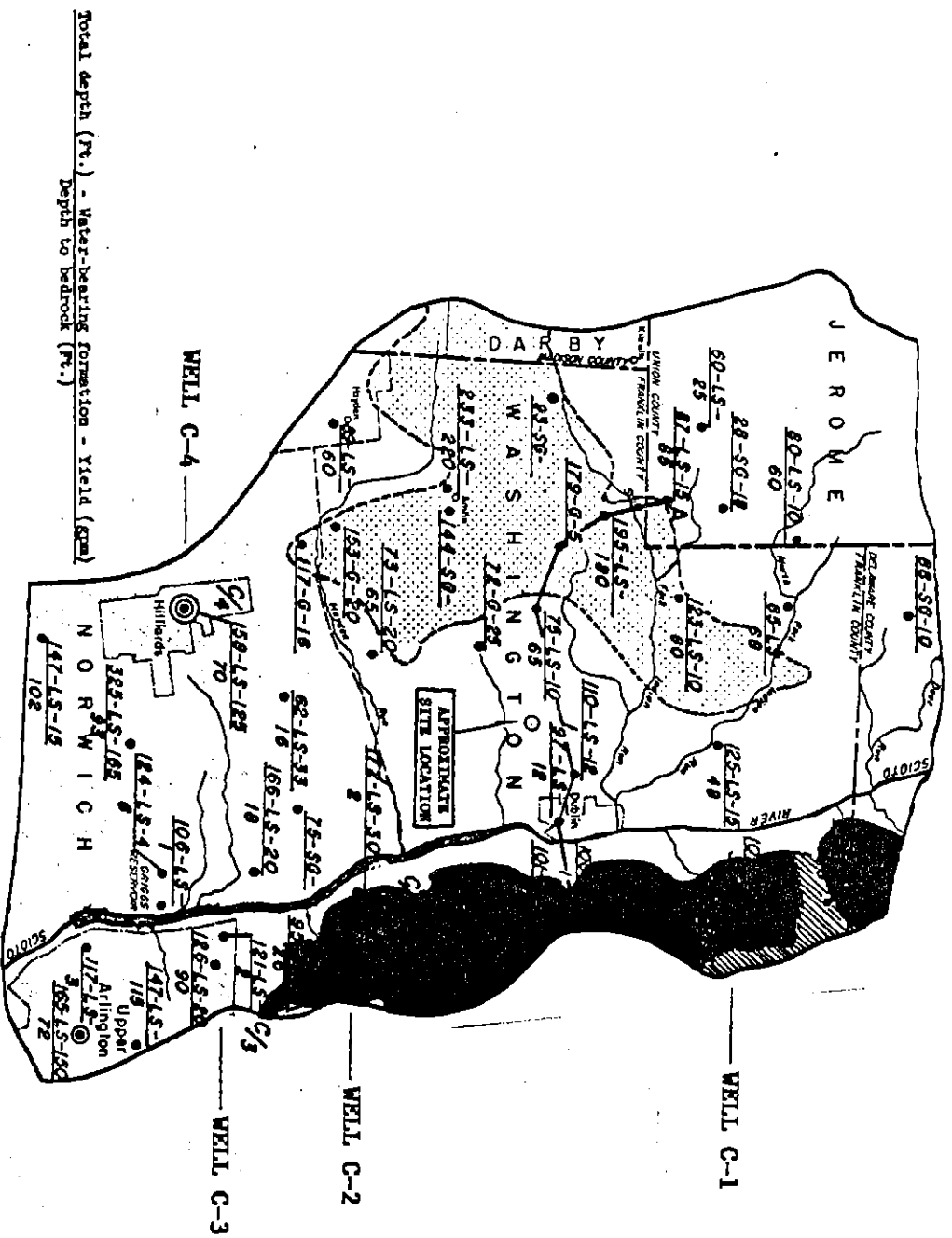


Figure 17 - Ashland Vicinity Groundwater Analysis Locations

The analytical data is from 1960 and may or may not be representative of ground water quality today. Well C-1 is 107 feet deep and the reported hardness concentration, 1880 parts per million, is considered representative of wells drilled in limestone in excess of 350 feet deep. Well C-1 may be developed in limestone composed essentially of calcium sulfate (gypsum), which would cause excessively hard water. The degree of hardness, dissolved solids, and sulfates generally increase with depth. The chemical analytical values for the C-2 well analysis may be considered as average for ground water wells drilled in limestone in the area at the time of the analysis.

No chemical ground water analyses are available for the sand and gravel aquifer.

G. RECEPTORS

The Ashland facility is located in a mixed business/industrial park. There are residential areas located to the west (on the other side of Interstate 270) and to the south (along Rings Road and beyond) of Ashland.

There are tributaries of the Scioto to the north (Tributary S1) and to the south (Tributary C1) that cross Ashland property. Further south, but north of Rings Road, Cramer Ditch intersects with Tributary S1. All streams drain to the Scioto River about one mile to the east.

The Ohio Department of Natural Resources has located well logs for residences to the west, southwest, and south (along Rings Road) of the facility. For more information concerning the geology and specific locations of wells in the vicinity see Section III. F. 6.- Aquifer Contamination Potential, Figure 13 (pg. 49), and Attachment D- Well Logs (Refs. 12, 32, & 33).

IV. DESCRIPTIONS OF SOLID WASTE MANAGEMENT UNITS

SWMU No. 1

Unit Name:

Mixing Unit (Photograph No.1)

Unit Description:

A mobile mixing container with approximately 100 gallons capacity. This unit has always been used in the South Bay Waste Management Area (SWMU #2).

Date of Start-Up:

1985

Date of Closure:

Unit is still in use, although not used for waste mixing since July 1990.

Waste Managed:

Waste resins diluted in unit with waste solvent to reduce viscosity so wastes can be pumped to Aboveground Storage Tanks.

Release Controls:

Used in the South Bay Waste Management Area (SWMU #2) which has a floor drain recovery system.

History of Releases:

No known releases. No evidence of releases observed.

Conclusions:

Soil/Groundwater: The release potential to soil/groundwater is low due to the indoor location of this unit and building design.

Surface Water: The release potential to surface water is low due to the indoor location of this unit and building design.

Air: The release potential to air is low due to the indoor location of this unit and building design.

Subsurface Gas: The release potential of subsurface gas is low due to the indoor location of this unit and building design.

(Refs. 10 & 17)

SWMU No. 2

Unit Name: South Bay Waste Management Area
(Photograph Nos. 2, 3 & 4)

Unit Description: A 1,520 square foot room with a concrete floor. The room has a floor drain to contain spills. The drain has two trenches. The large trench is 19'6" long, 18" deep, and 12 1/2" wide. The small trench is 15' long, 5 1/2" deep, and 4" wide. Any spills to the trench portion of the drain are pumped back into a drum. A plug is usually kept in the drain, except when cleaning the floor. The drain leads to a sump in the room below, which is pumped to the city of Columbus sewers.

Two waste lines leading to the Aboveground Storage Tanks (SWMUs #8 & #9) originate in this room. Drums that contain pumpable compatible wastes are emptied into the tanks via these lines.

Excess laboratory chemicals are also stored in this area. Ashland tries to find universities that can make use of these unneeded reagents.

Date of Start-Up: 1985

Date of Closure: This unit is currently in operation.

Waste Managed: Solvents, resins, varied laboratory wastes, etc. All facility chemical wastes pass through this area. Once compatibility is established, most waste is pumped to Aboveground Storage Tanks #8 & #9). Other waste is sent to the Drum Storage Pad.

Release Controls: Floor drain with plug.

History of Releases: No known releases. Evidence of some floor staining.

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is low

based on the indoor location of this unit and building design.

Surface Water: The release potential to surface water is low based on the indoor location of this unit and building design.

Air: The release potential to air is low based on the indoor location of this unit and building design.

Subsurface Gas: The release potential of subsurface gas is low based on the indoor location of this unit and building design.

(Refs. 7, 10, 11, & 17)

SWMU No. 3

Unit Name: Aboveground Storage Tank #8
(Photograph Nos. 5, 7, & 8)

Unit Description: A 2,000 gallon carbon steel tank with aboveground piping. The tank is filled through carbon steel waste lines leading from the South Bay Waste Management Area (SWMU #2).

The unit is in a fenced and locked tank farm with three other tanks (SWMU #4 and two solvent raw material tanks #6 & #7). The tank farm has a gravel and dirt dike with a 9,080 gallon capacity (capacity of four tanks in tank farm totals 10,000 gallons).

Ashland is currently in the process of removing Aboveground Storage Tanks #6 & #7.

Date of Start-Up: 1978

Date of Closure: This unit is currently in operation.

Waste Managed: Waste solvents and resins.

Release Controls: Annual integrity testing of tanks and external piping. Overfill alarm system. Gravel and dirt dike with 9,080 gallon capacity (capacity of four tanks in tank farm totals 10,000 gallons).

History of Releases: No known releases. No evidence of releases (i.e. stained gravel, etc.) observed.

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is high due to the lack of adequate secondary containment and the age of the tank.

Surface Water: The release potential to surface water is medium due to the distance to surface water and site topography.

Air: The release potential to air is medium due to the age of the tank and its outdoor location.

Subsurface Gas: The release potential of subsurface gas is high due to the lack of adequate secondary containment and the age of the tank.

(Refs. 6, 7, 10, 17, 34, 35, & 36)

SWMU No. 4

Unit Name:

Aboveground Storage Tank #8
(Photograph Nos. 6, 7, & 8)

Unit Description:

3,000 gallon carbon steel tank with aboveground piping. The tank is filled through carbon steel waste lines leading from the South Bay Waste Management Area (SWMU #2).

The unit is in a fenced and locked tank farm with three other tanks (SWMU #3 and two solvent raw material tanks #6 & #7). The tank farm has a gravel and dirt dike with a 9,080 gallon capacity (capacity of four tanks in tank farm totals 10,000 gallons).

Ashland is currently in the process of removing Aboveground Storage Tanks #6 & #7.

Date of Start-Up:

1978

Date of Closure:

This unit is currently in operation.

Waste Managed:

Waste solvents and resins.

Release Controls:

Annual integrity testing of tanks and external piping. Overfill alarm system. Gravel and dirt dike with 9,080 gallon capacity (capacity of four tanks in tank farm totals 10,000 gallons).

History of Releases:

No known releases. No evidence of releases (i.e. stained gravel, etc.) observed.

Conclusions:

Soil/Groundwater: The release potential to soil/groundwater is high due to the lack of adequate secondary containment and the age of the tank.

Surface Water: The release potential to surface water is medium due to the distance to surface water and site topography.

Air: The release potential to air is medium due to the age of the tank and its outdoor location.

Subsurface Gas: The release potential of subsurface gas is high due to the lack of adequate secondary containment and the age of the tank.

(Refs. 6, 7, 10, 17, 34, 35, & 36)

SWMU No. 5

Unit Name: Drum Storage Pad (Photograph Nos. 9, 10, 11, & 12)

Unit Description: An approximately 10,000 square foot six inch thick concrete pad. About 3,200 square feet of the north edge of the pad is used for hazardous waste storage. The pad is surrounded by a locked chain link fence that is six feet nine inches tall. A chain link fence also separates the southern third of the pad (maintenance area) from the northern two-thirds, the waste storage area. A maximum of 400-55 gallon drums (22,000 gallons) of hazardous waste have been stored on the pad.

A well house is located on the northeast corner of the pad. This well supplies water for the R & D Building and one of the two Administration Buildings (approximately 600-700 people). The water line for the well runs west across the northern edge of the pad under the hazardous waste storage section of the pad (and under a non-hazardous waste storage section).

The pad is located within 100 feet of surface water (Tributary S1) and probably overlaps the associated flood plain (see Figure 10, pg. 44).

Date of Start-Up: 1978

Date of Closure: This unit is currently in operation but a closure plan for the unit was submitted on June 14, 1991.

Waste Managed: Characteristic wastes including ignitable, corrosive, reactive, and toxic (various metals), spent solvents, etc. Also a variety of laboratory generated listed wastes.

Release Controls: Concrete appears to be in good condition. Drums are on pallets and

History of Releases:

inspected frequently. No secondary containment.

No known releases. Minimal staining of concrete observed. No evidence of releases observed in soil or grass surrounding the pad.

Conclusions:

Soil/Groundwater: The release potential to soil/groundwater is high due to the lack of any secondary containment of the unit.

Surface Water: The release potential to surface water is high due to the lack of secondary containment and the proximity of surface water (just north of the drum pad, within 100 feet) to the unit. The flood plain of this stream probably overlaps with the pad.

Air: The release potential to air is medium due to the outdoor location of the unit.

Subsurface Gas: The release potential of subsurface gas is high due to the lack of secondary containment of the unit.

(Refs. 3, 8, 10, & 17)

SWMU No. 6

Unit Name: Inside Interim Drum Storage Area
(Photograph No. 13)

Unit Description: This hazardous waste storage area occupies approximately 150 square feet of the 1,600 square foot solvent storage room. Waste drums are stored here temporarily while waste is accumulated in the drums. One drum of waste was stored in the room at the time of the VSI (by the Polyesters Division). The area reserved for storage of wastes is in the northwest corner of the room.

The Underground Storage Tank, SWMU #8, used to connect to this room via piping through the wall. The tank has since been removed and the hole patched (although it is visible in Photograph #15).

Date of Start-Up: 1971

Date of Closure: This unit is currently in operation.

Waste Managed: Currently the only drum in this area is being accumulated by the Polyesters Division. Previously this was the only interim drum storage area (until the Outside Interim Drum Storage Area, SWMU #7, came into use) and all labs accumulated their wastes here.

Release Controls: None.

History of Releases: No known releases. Some floor staining in the area.

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is low due to the indoor location of the unit and building design.

Surface Water: The release potential to surface water is low due to the indoor location of the unit and building design.

Air: The release potential to air is low due to the indoor location of the unit and building design.

Subsurface Gas: The release potential of subsurface gas is low due to the indoor location of the unit and building design.

(Refs. 7, 10, & 17)

SWMU No. 7

Unit Name: Outside Interim Drum Storage Area
(Photograph No. 14)

Unit Description: A 25 square foot concrete area along the north exterior wall of the building. The area is covered with a tin roof. Several drums are simultaneously accumulated by many labs. The wastes are separated by type and by the divisions generating the waste. The area is surrounded by other paved and concrete areas.

Date of Start-Up: 1990

Date of Closure: This unit is currently in operation.

Waste Managed: Most of the laboratory wastes generated by the facility.

Release Controls: Sorbent socks surround drums (for spills).

History of Releases: No known releases. The concrete is stained in the area of the drums.

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is medium due to the location of the unit (adjacent to the building surrounded by paved areas).

Surface water: The release potential to surface water is medium due to the location of the unit and the distance to surface water.

Air: The release potential to air is medium due to the outdoor location of the unit.

Subsurface Gas: The release potential of subsurface gas is medium due to the location of the unit (adjacent to the building surrounded by paved areas).

(Refs. 7, 10, & 17)

SWMU No. 8

Unit Name: Underground Storage Tank (Photograph No. 15)

Unit Description: The tank was 21 feet long and 8 feet in diameter having an 8,000 gallon capacity. It was constructed of stainless steel. Aboveground piping connected the tank to the Inside Interim Drum Storage Area (SWMU #6).

Date of Start-Up: 1978

Date of Closure: Unit underwent RCRA closure and was removed in 1988.

Waste Managed: D001, F001, F002, F003, and F005

Release Controls: None.

History of Releases: After tank removal (1988) trace levels of residual contaminants (methylene chloride, 1,1,1-trichloroethylene, and toluene) were found. After additional excavation, sampling of removed soils showed no detectable levels of contaminants in the removed soils.

Conclusions: Soil/Groundwater: The release potential to soil/groundwater is zero since the unit has been removed.

Surface Water: The release potential to surface water is zero since the unit has been removed.

Air: The release potential to air is zero since the unit has been removed.

Subsurface Gas: The release potential of subsurface gas is zero since the unit has been removed.

(Refs. 3, 4, 17, & 22)

V. SUMMARY OF SUGGESTED FURTHER ACTIONS

TABLE 8 - SUMMARY OF SUGGESTED FURTHER ACTIONS

UNIT NO.	UNIT NAME	OPERATIONAL DATES	SUGGESTED FURTHER ACTION	EVIDENCE OF RELEASE
1	Mixing Unit	1985-present	None at this time	No
2	South Bay Waste Mgmt. Area	1985-present	Test floor drain integrity	Yes*
3	Aboveground Stor. Tank #8	1978-present	Concrete dike for tank farm	No
4	Aboveground Stor. Tank #9	1978-present	Concrete dike for tank farm	No
5	Drum Storage Pad	1978-present	Move the unit & dike the unit	Yes*
6	Inside Inter. Drum Storage	1971-present	None at this time	Yes*
7	Outside Inter Drum Storage	1990-present	Concrete dike the area	Yes*
8	Underground Storage Tank	1978-1989	None- unit removed	No

* - some floor/concrete staining
(Refs. 4 & 17)

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ATTACHMENT A: VISUAL SITE INSPECTION LETTER

RECEIVED

APR 23 1991

Ohio Environmental Protection Agency
Central District Office

APR 19 1991

CERTIFIED MAIL: P707 061 532
RETURN RECEIPT REQUESTED

5HR-13

Mr. Jeffrey Kirk
Ashland Chemical, Inc.
Research and Development Lab
5200 Blazer Parkway
Dublin, Ohio 43017

RE: Visual Site Inspection
Ashland Chemical, Inc.
Dublin, Ohio
OHD 042 311 209

Dear Mr. Kirk:

This letter serves as notification that a Visual Site Inspection (VSI) is to be conducted at the Ashland Chemical, Inc., facility by representatives of the United States Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (OEPA). This VSI has been scheduled for April 26, 1991. Your cooperation in assisting the U.S. EPA and OEPA will be appreciated. An agenda of the VSI is enclosed in Attachment I.

Under the 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA), a RCRA Facility Assessment (RFA) is required of the Ashland Chemical, Inc., facility. The VSI is one component of the RFA which is comprised of the Preliminary Review (PR), Visual Site Inspection, and if necessary, a Sampling Visit (SV). The RFA requires identification and systematic review of all solid waste streams at the facility. The objective of this assessment is to determine whether or not releases of hazardous waste or hazardous constituents have occurred or are occurring at the site which require further investigation. This evaluation will provide information to establish priorities for subsequent remedial investigation.

The Preliminary Review completed by OEPA for Ashland Chemical, Inc., facility has identified a number of "solid waste management units" (SWMUs) and "areas of concern" (AOCs) at this facility which are itemized in Attachment II. Attachment III includes a list of additional information needs that were identified during the review of OEPA files; this information will be supplied by facility representatives during the VSI introductory meeting.

The VSI of your facility will serve to verify the location of all SMUs and AOCs and to make a cursory determination of their condition by visual observation. The purpose of the site visit is to obtain a technical understanding of your facility as it relates to your process operational controls, current and historical waste flows and handling, as well as treatment, storage, and disposal practices. Assistance of your personnel who are knowledgeable of general facility procedures, solid waste flow(s), and previous disposal practices will be required during the VSI. Please note that it is imperative that a facility representative knowledgeable in historic site operations be present during the VSI. Photographs of each SMU will be taken by OEPA to document the condition of units at the facility and the waste management procedures used. No samples will be taken during this visit.

In preparation for the VSI, the OEPA inspection personnel are required to identify any potentially hazardous conditions likely to be encountered at the site during performance of the VSI and to prepare a safety plan that deals with the hazards. You will be contacted by the OEPA in the near future to obtain specific information on the level(s) of personal protection required and materials handled in each area of your facility.

Should you have any questions regarding this letter, please contact Kae Lee of my staff, at (312) 886-6182.

Sincerely,

Lisa A. Pierard, Chief
Ohio Permitting Section
RCRA Permitting Branch

Enclosures

cc: Sue Nitecki, OEPA-DERR-CO w/encl.
Dave Sholtis, OEPA-CO w/encl.
Lundy Adelsberger, OEPA-DSHM-CO w/encl.
Jeff Reynolds, OEPA-DERR-CO w/encl.

PROPOSED RCRA VISUAL SITE INSPECTION AGENDA

Facility: Ashland Chemical Company Inc
Dublin, Ohio

EPA ID #: OH0 042311209

Facility Contact: Jeffrey Kirk
Environmental Engineer

Date of Inspection: April 26, 1991

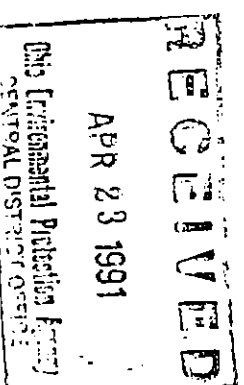
Personnel Making Inspection:

Jeff Reynolds	Ohio EPA	(614) 771-7505
Chris Hartford	Ohio EPA	(614) 771-7505
Kae Lee	USEPA	(312) 886-6182

PURPOSE OF VISUAL SITE INSPECTION

The Hazardous and Solid Waste Amendments (HSWA) of 1984 broaden the EPA's authority under RCRA to require corrective action for releases of hazardous wastes and solid wastes containing hazardous constituents at facilities that manage hazardous wastes. The corrective action authority extends to all solid waste management units (SMUs) which may be potential sources of releases at the facility. The first phase of the corrective action program is performance of a RCRA Facility Assessment (RFA). The RFA includes a preliminary review (PR) of available file information, a visual site inspection (VSI) of the facility, and, if necessary, a sampling visit. A PR of file material has been performed for this facility, and a VSI has been determined to be necessary. The purposes of the VSI are:

1. To collect all available relevant information on solid waste management practices that have been used at the site;
2. To gain first-hand information regarding the proper identification, location, construction, configuration, function served, method of operation, and condition of each SMU;
3. To confirm, by visual inspection and discussion with facility representatives, the information collected during the PR, and to update and/or correct this information as appropriate;
4. To survey the site for additional SMUs and other areas of concern (AOCs) not identified in the PR;



- of concern (AOCs) not identified in the PR;
5. To identify potential sample points for possible future sampling activities;
 6. To review the site information and collect additional information to address the information needs identified during the PR; and
 7. To take photographs of all SMRUs and other areas of concern.

INSPECTION PLAN

Ohio EPA and USEPA personnel will perform the inspection. They will inspect past and present waste handling, storage, treatment, and disposal areas on site. Outdoor and indoor waste generation, collection, and/or accumulation areas in laboratories and production facilities will be inspected as necessary to acquire a complete understanding of waste handling methods. They also will inspect potential pathways for release of hazardous constituents into the environment. Facility staff will be interviewed to develop a better understanding of past and present waste management practices. Any available environmental monitoring or sampling data for characterization of the soils, groundwater, surface water (or runoff), and air quality at the site, will also be reviewed.

PROPOSED INSPECTION SCHEDULE

The schedule which follows has been prepared based on the PR and is intended to allow a visual inspection of all SMRUs and other AOCs at the site. The schedule may be adjusted as necessary at the time of the visit to accommodate unforeseen conditions.

The overall rationale of the inspection plan is to enable the team to inspect the entire facility. Some adjustments to the agenda may be necessary and can be made on site to accommodate facility staff, geographical location of the units, and/or operational constraints.

VSI AGENDA

April 26, 1991

9:00 - 9:30 a.m.

Introductory meeting with facility contacts; discuss agenda, health and safety considerations.

9:30 - 11:00 a.m.

Discuss facility operations (both past and present) and wastes generated; process lines and waste collection, treatment, and disposal methods (including wastes shipped off site). Identify SMTUs and AOCs not found during the PR.

11:00 - 12:30 p.m.

In conjunction with the discussions regarding facility operations, tour the facility including storage and waste areas.

12:30 - 1:30 p.m.

Lunch

1:30 - 2:00 p.m.

Review information received before lunch, discuss any information gaps identified.

2:00 - 2:30 p.m.

Inspect any additional units or areas not previously identified.

2:30 - 3:30 p.m.

Closing meeting with facility contact(s). Discuss information needs generated by VSI activities. Obtain any additional information on SMTUs or other AOCs.

PRELIMINARY LIST OF SEMUS AND OTHER AREAS OF CONCERN

The preliminary lists of SEMUS and other AOCs presented in Table 1 were developed based on a PR of Ohio EPA file material. If any of the units or areas listed no longer exist, the locations of the former units or areas should be identified by facility representatives during the VSI. Likewise, any other units or areas where solid wastes, both hazardous and nonhazardous, are treated, stored, or disposed, and areas where potentially hazardous materials such as chemical feedstocks, fuels, acids, caustics, etc., are stored, handled, or transferred, should be identified by facility representatives during the VSI.

TABLE 1
PRELIMINARY LIST OF SOLID WASTE MANAGEMENT UNITS

1. Underground Storage Tank (Removed 1988)
2. Drum Storage Pad (including water well)
3. Aboveground Tank # 8
4. Aboveground Tank # 9
5. Mixing Container (Blending Unit)
6. Interim Drum Storage Area(s?)

ATTACHMENT III

LIST OF ADDITIONAL INFORMATION NEEDED

1. An explanation of how all waste streams are managed, from points of generation to areas of accumulation, to ultimate disposition.
2. Identification of site activities that occurred prior to the establishment of current operations, including previous site owners.
3. Current and historical diagrams showing industrial wastewater, sanitary sewer, and stormwater pipelines at the facility, including all sumps.
4. Recent facility map showing site boundaries.
5. Underground Storage Tank Notification or Inventory of any current and former storage tanks; also, include the following information:
 - * location;
 - * capacity;
 - * type of construction material;
 - * dates and results of integrity tests;
 - * purpose;
 - * release history; and
 - * sampling results
6. SARA title III list of raw materials and emissions inventory.
7. Well documentation, including specifications, locations, yields, etc., (if available) and sampling results.
8. Any other soil sampling results, including sampling techniques, analytical results, other data, and actions taken.
9. For each SWMU and AOC in Table 1 (or otherwise known by Ashland), provide the following information:
 - * location on facility map;
 - * dates of operation;
 - * design features (e.g., material of construction, dimensions of unit, and release controls);
 - * history of unit's construction (e.g., indicate whether current release controls have been in place over the life of the unit);
 - * run-on/run-off controls at the unit;
 - * details on the method of waste transfer, including transfer release controls;
 - * details of any waste management practices over the life of the unit;

- * description of wastes managed and their
- * volumes;
- * history of releases;
- * regulatory status; and
- * closure information, if applicable.

**ATTACHMENT B. CLEAN CLOSURE PLAN FOR UNDERGROUND STORAGE TANK
AND OHIO EPA ACCEPTANCE**

UNDERGROUND WASTE TANK
CLOSURE PLAN

FOR

ASHLAND CHEMICAL COMPANY
RESEARCH AND DEVELOPMENT LABORATORY
5200 BLAZER PARKWAY
DUBLIN, OHIO 43017

CLOSURE PLAN FOR AN UNDERGROUND STORAGE TANK

Ashland's Research and Development Laboratory has engaged in storage of hazardous wastes in an 8,000 gallon underground tank. Subpart J - Tanks, (paragraphs 265.197) Closure requires removal of all hazardous waste and hazardous waste residues from tank.

General Description

Ashland Chemical Research and Development Laboratory is located in the Village of Dublin which is northwest of the City of Columbus, Ohio. The R&D Laboratory is next to the administrative headquarters building of Ashland Chemical Company.

The R&D Laboratory location is shown on the Hilliard, Ohio, USGS topographic map which is enclosed.

The street address of the R&D Laboratory is:

Ashland Chemical Company
Research and Development Laboratory
5200 Blazer Parkway
Dublin, OH 43017

The Ashland R&D Laboratory is the main research and development facility for Ashland Chemical. In this capacity, Ashland is involved in research in foundry products, polyester resins, specialty polymers, adhesives, electronic and laboratory chemicals, petrochemicals, industrial chemicals and solvents and polymers.

Research is done in the laboratory as well as on the pilot plant scale. During this research, various chemicals are made and by-products are generated which must be ultimately sent off-site for disposal.

Wash solvent from the cleaning of reactors in the pilot plant and line flush solvents are stored in an 8,000 gallon underground tank beside the R&D Laboratory on the north side. These wash solvents and line flush solvents have been incinerated off-site.

Description of Hazardous Waste Storage Tank and General Geological Information

Ignitable wastes (D001, F003, F005) have been stored in the 8,000 gallon underground storage tank. The tank is used for storage of solvents used in pilot plant equipment cleaning and as line flush. The cleaning and line flush solvents consist of a mixture of toluene, xylene, methyl ethyl ketone, and possibly other ignitable solvents which are listed and not listed. Accumulation within the tank was checked weekly, and the material recovered from the tank was disposed of by incineration.

The tank is 316 stainless steel and is 21'0" long and 8'0" in diameter. Figure 1 gives additional information, while Figure 2 shows the tank location at the Dublin facility. The shell of the tank is $\frac{1}{4}$ " thick. The tank has the following nozzles/openings:

1. A 4" schedule 10, 316 stainless steel draw pipe. This draw pipe goes to within 4 inches of the bottom of the tank and rises 3'6" above the top of the tank. There is a 150# carbon steel flange at the top of the draw pipe connecting it to the line which is used to empty the tank into a tanker.
2. A 3" vent which is approximately 6" above the top of the tank. This vent has a 150# 316 stainless steel flange on it which is attached to a vent pipe coming up through the ground.
3. A 20" manway which is bolted with a non-friable asbestos gasket.
4. A 3" spare vent equipped with a gauge for determining the liquid level in the tank.
5. A 2" schedule 10, 316 stainless steel fill pipe. The fill pipe goes within 6" of the bottom of the tank.

The tank is buried outside the R&D Laboratory near the R&D Loading Dock. When the tank was installed, a concrete slab was poured under the tank to anchor the unit. The tank was placed in service in 1980. The tank is identified on line 4 of the, Part A application incorporated within the Ohio permit. A copy of the Part A application is enclosed as our attachment to this closure plan.

A maximum of 8,000 gallons of hazardous waste may have been stored in the tank at any given time, and the contents of this tank were stored over 90 days. The underground waste tank was disconnected from service, emptied and cleaned during December 1987. The tank will be maintained empty until this closure plan is implemented. As a result, the need to demonstrate the tank's integrity in accordance with 40 CFR 265.191a is not necessary.

A general geological assessment has been prepared by T. M. Gates, Inc. and is enclosed as an attachment to this closure plan.

Closure of the Underground Waste Solvent Storage Tank

At the time of tank closure, the tank will already be empty and clean as a result of work performed during December 1987. All material removed from the tank was pumped into drums, managed as hazardous waste, and transported to Ross Incineration Services, Inc., located in Grafton, Ohio, for incineration.

The tank and appurtenances were cleaned by hydroblasting (i.e., pressure washing) and the recovered rinseate transported in bulk for treatment and subsequent disposal to Chem Clear, Cleveland, Ohio, as a non-hazardous waste. A representative sample of the recovered rinseate was analyzed by Chem Clear to verify the material was non-hazardous prior to shipment. The emptied tank was checked with an explosion meter which did not detect any lower explosive level (LEL) vapors and the unit was considered clean.

The clean status of the tank will be further verified and closure of the tank will be completed in the following manner:

1. Overburden soil will be carefully excavated by a backhoe to expose the tank surface, manways, and transfer line connections.
2. The empty tank will be tested again for L.E.L. using an explosion meter and any rinsate residue from the hydroblasting will be sampled. If the L.E.L. readings indicate the presence of organic vapors, an explosion proof air-activated turbine driven blower/exhaust fan will be used to vent the tank until L.E.L. readings are below detectable. The tank and appurtenances will be hydroblasted again, if the tank does not contain an adequate amount of the rinsate residue for sampling. The resultant liquid produced from the hydroblasting will be sampled. Sampling will be accomplished by pumping the liquid to a drum for collection with a COLIWASA Tube, or equivalent.
3. A sample of rinsate residue or a sample collected after hydroblasting (i.e., pressure washing) the tank and all appurtenances will be analyzed for F003 and F005 constituents which include xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, MIBK, n-butyl alcohol, cyclohexanone, methanol, and toluene, MEK, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, 2-nitropropane, respectively. The sample will also be tested for flash point.

A "performance standard" of less than 1 mg/l of any F003/F005 constituent and/or a flash point of greater than 140°F will be the basis used to determine if the tank is clean or additional pressure washing is required.

4. The soil backfill around the tank will be excavated, placed on plastic and checked with photoionization detector. If the soil is free of organic vapors, a sample will be collected and analyzed for F003/F005 constituents to determine if the material must be managed as hazardous waste or used as backfill in accordance with the "soil performance standard." If organic vapors are detected, the soil will be sampled after all suspect soil is removed from the excavation as described in Item 6 below.
5. Once a rinsate sample from the tank complies with the liquid performance standard, the tank will be lifted out of the excavation by a crane, inspected and moved to a staging area. An external inspection will be performed to determine the tank's integrity. The decontaminated tank will be placed in service elsewhere within Ashland, or cut up for a metal recycler.
6. To measure the presence of organic vapors in the open excavation, a photoionization detector will be employed. Soils that demonstrate a positive reading on the detector will also be removed from the excavation, sampled and analyzed for F003/F005 constituents.

To verify and assess preclosure tank leakage, the following soil sampling and analysis will be performed:

Soil Sampling Plan

1. A soil sample shall be taken from each of the four sidewalls at mid-depth and represent soil extending 0-6 inches laterally into the side. An additional sample shall be taken from the bottom of the excavation pit. If a concrete slab exists at the bottom of the pit, 4 additional samples shall be taken, one from each corner of the slab. The soil sampling locations shall be specified on a map of the tank area.

If an elevated water table prevents sampling in the excavated pit, then 4 perimeter samples shall be substituted for the 4 sidewall samples and an additional water sample will be taken.

2. Sample compositing is not permitted.

Alternate Soil Sampling Plan

If the excavation is determined to be unsafe or unstable by the professional engineer, Ohio EPA Inspector (if present), and other experienced personnel at the site, the location/number of soil samples will be field determined.

Soil Analysis (Soil Performance Standard)

3. Soil remediation, removal, etc., will depend upon each F003/F005 identified component concentration and the approved Toxicity Characteristic Leaching Procedure (TCLP) contaminate levels or at the analytical detection level for contaminants for which the TCLP does not apply.

The Recommended Maximum Contaminate Level (RMCL) and the TCLP are found in 50 FR 48944, November 27, 1985. If this approach is not allowed by the agency, the analytical detection level for each F003/F005 component will be the basis to determine if additional soil removal is necessary.

A performance standard for soil test results that demonstrate approved TCLP levels or below detectable contaminant levels for F003/F005 constituents will allow the excavation to be backfilled using excavated soils, and additional granular backfill imported to restore the site to grade. A soil sampling plan intended to define the extent of contamination beyond the excavation will be developed and submitted to the agency if soils above the water table show elevated contaminated levels. If the groundwater shows elevated contaminant levels, a hydrogeologic investigative program will be developed and submitted for regulatory review. The hydrogeological investigative program will comply with the closure/post-closure care requirements that apply to landfills.

Closure Notification and Schedule of Closure

Ashland will initiate closure activities in accordance with the schedule shown in Figure 3. The Ohio EPA's facility inspector will be contacted at least five (5) business days in advance of certain critical activities, such as tank removal and soil sampling, so that the inspector may be present to observe these activities.

The independent professional engineer will be present at all critical activities during closure. The frequency of inspections by the independent engineer shall be sufficient to determine the adequacy of each activity.

A certification will be completed both by Ashland and by an independent registered professional engineer. The certifications will comply with OAC 3745-50-42 and OAC 3745-50-42(D). These certifications will be forwarded to the Ohio EPA and the Federal EPA.

Notice in Deed and Notice to Local Land Authority

Because this is only a hazardous waste storage facility and not a disposal facility, notation is not necessary in the deed informing potential purchasers of restrictions associated with a disposal site unless required by the closure/post-closure requirements that apply to landfills.

Personnel Decontamination

Personnel involved in the closure will review chemicals identified in this plan, material safety data sheets and manifests to determine the extent of protective equipment required. At a minimum, employee protective equipment will include rubber gloves, rubber boots, protective clothing, eye goggles and hard hats. If there is any indication of vapor over exposure, suitable respiratory protection will be employed. Any of the protective equipment contacted by material that must be managed as hazardous waste will be disposed of at a permitted RCRA site.

The excavation will also be checked with an explosion meter and HNU photoionization detector. Further work, (e.g., soil sampling), additional excavation, will be stopped if elevated readings with either detector are experienced. Once the meter readings are considered normal, personnel will be allowed to enter the excavation for soil sampling. Appropriate respiratory protective equipment will be employed at any time when there is evidence of potential over exposure to vapors.

Quality Assurance/Quality Control Plan

All soil and water samples will be analyzed for F003/F005 constituents by GC/MS according to EPA Methods 8240, 8250, 8270 and 8310 as referenced in the EPA document SW-846.

A strict chain of custody record will be maintained for each collected sample.

Closure Cost Estimate

The closure cost in Table 1 is based upon actual costs experienced to date and estimated costs for uncompleted tasks. Closure cost activities include removal of waste inventory, tank cleaning, tank testing, tank removal, soil management and professional engineer's certification. A 10% contingency has been added for unknowns and for Ashland administration/overhead.

The assumptions made in the cost estimate are as follows:

1.0 Removal of Waste Inventory

The cost is an actual number for material taken to Ross Incineration Services, Inc., for incineration.

2.0 Tank Cleaning

The cost is the actual number for cleaning and disposing of pressure wash material recovered from the tank.

3.0 Other Costs

The other costs provided are estimates based upon past experience. The basis for each cost is provided in the table. Some of the costs may not be experienced, but a maximum cost number is provided.

TABLE 1

ASHLAND CHEMICAL COMPANY

RESEARCH AND DEVELOPMENT LABORATORY

UNDERGROUND TANK CLOSURE - COST ESTIMATE

<u>Removal of Waste Inventory</u>	
Disposal of Drummed Hazardous Waste at Ross (21 Drums or 1,155 Gallons)	\$ 4,194
Transportation	177
<u>Tank Cleaning</u>	
Tank Cleaning Already Accomplished	8,410
Disposal of Non-Hazardous Tank Rinsate at Chem Clear (3,850 Gallons)	333
Additional Hydroblasting of Tank	2,100
<u>Tank Testing</u>	
Explosion Meter Testing (2 Hours at \$25/Hour)	50
Rinsate Sampling (2 Hours at \$75/Hour)	150
Rinsate Analysis (2 Samples for F003/F005 at \$1,500/Sample for constituents)	3,000
<u>Tank Removal</u>	
Backhoe and Operator } (Contractor Quote) Crane and Operator }	3,300
<u>Soil Management</u>	
Soil Managed as Hazardous Waste (1,000 ft at \$6/ft Disposal Cost)	6,000
Soil Transportation (\$14/Loaded Site)	800
Soil Sampling and Testing (9 Soil Samples Analyzed for F003/F005 Constituents at \$1,500/sample)	\$13,500
Additional Soil Sampling/Testing (9 Samples Maximum)	13,500

Professional Engineer's Certification

Labor (40 Hours at \$75/Hour)

3,000

Expenses (4 Days at \$100/Day)

400

Sub Total

58,914

Contingency - 10%

5,890

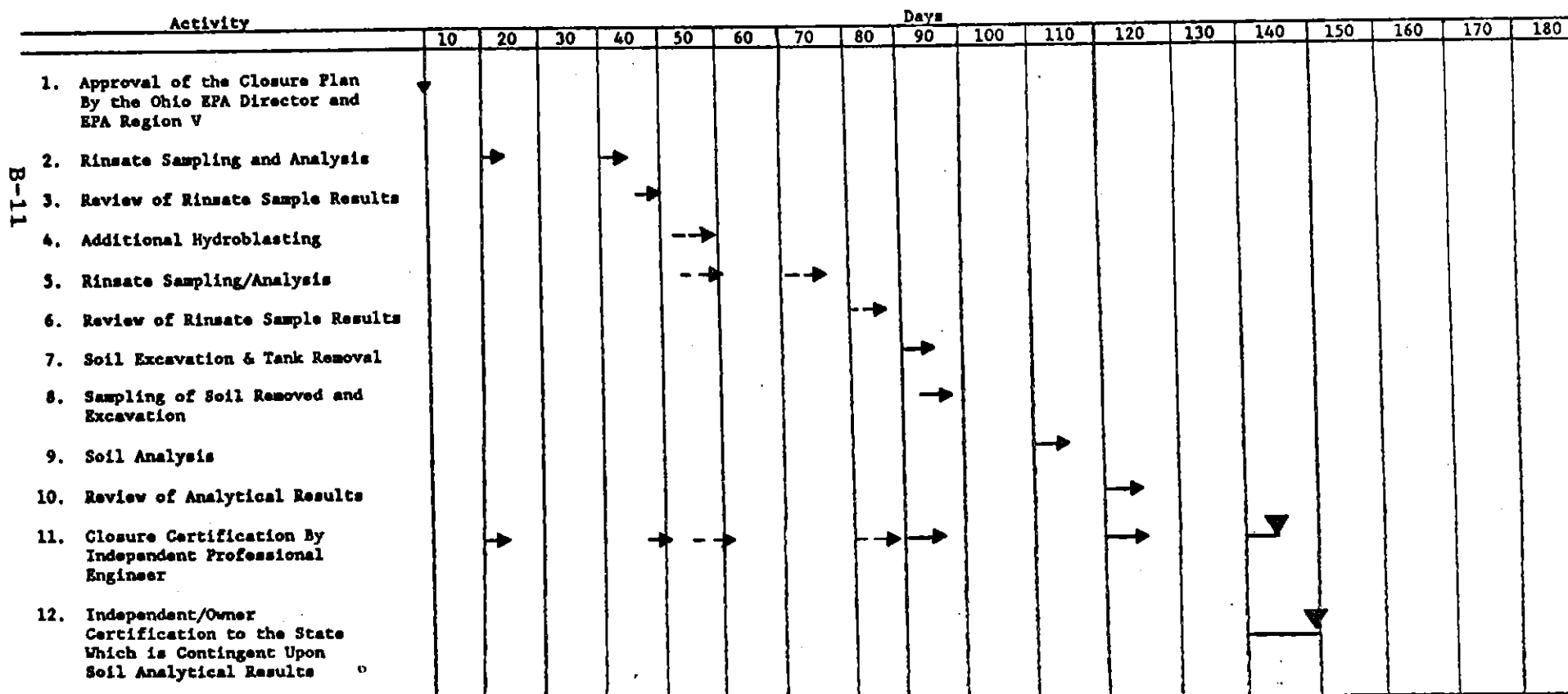
Ashland Administrative and Overhead

5,890Total

\$70,694

FIGURE 3

Anticipated Closure Schedule for the Underground Tanks



- Expected activity.

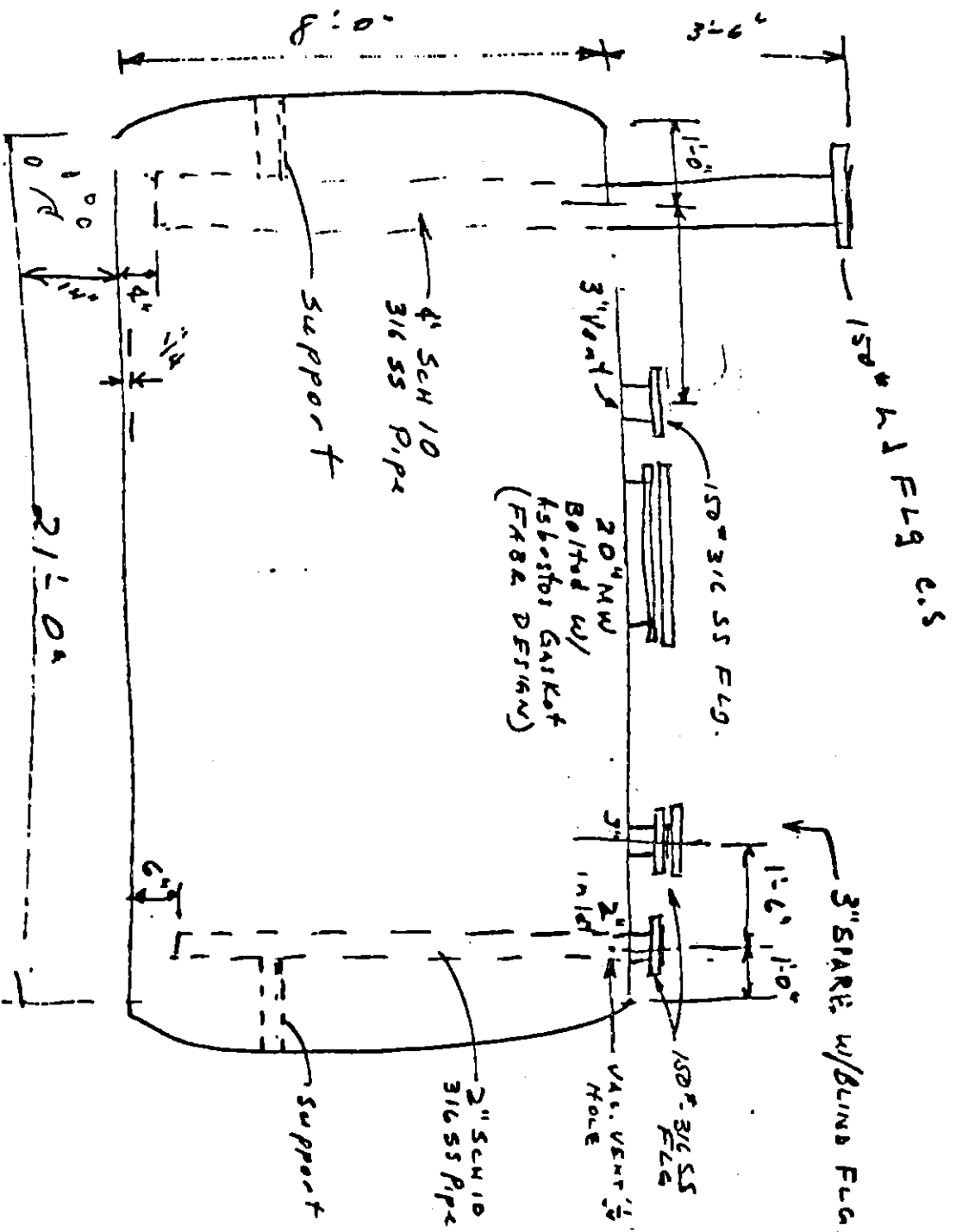
-- Activity that may not be required.

LATION SHEET
AND CHEMICAL COMPANY, ENGINEERING DEPARTMENT

DATE: 10-30-79

SEAR SOLVENT STORAGE TANK - RESEARCH LAB

BY:	CHECKED BY:	APPROVED BY:	REV. NO.	REV. DATE
			E-3172	



3/16 SS
1/4" Thick

JOB # 80606
RECEIVED
1008
CODE
SIGNED

Figure



State of Ohio Environmental Protection Agency

O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149



Richard F. Celeste
Governor

CERTIFIED MAIL

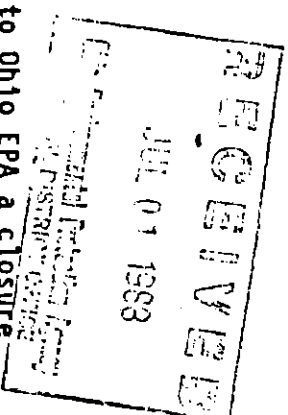
June 30, 1988

Re: CLOSURE PLAN
ASHLAND CHEMICAL COMPANY
OHD042311209, 01-25-0118

Mr. Michael E. Muller, Manager
Research Building Services
Ashland Chemical Company
5200 Paul G. Blazer Memorial Parkway
Dublin, Ohio 43017

Dear Mr. Muller:

On January 8, 1988, Ashland Chemical Company submitted to Ohio EPA a closure plan for a hazardous waste underground storage tank located at 5200 Paul G. Blazer Memorial Parkway, Dublin Ohio. Revisions to the closure plan were received on June 7, 1988. The closure plan was submitted pursuant to Rule 3745-66-12 of the Ohio Administrative Code (OAC) in order to demonstrate that Ashland Chemical Company's proposal for closure complies with the requirements of OAC Rules 3745-66-11 and 3745-66-12.



The public was given the opportunity to submit written comments regarding the closure plan of Ashland Chemical Company in accordance with OAC Rule 3745-66-12. No comments were received by Ohio EPA in this matter.

Based upon review of the company's submittal and subsequent revisions, I conclude that the closure plan for the hazardous waste facility at Ashland Chemical Company meets the performance standard contained in OAC Rule 3745-66-11 and complies with the pertinent parts of OAC Rule 3745-66-12.

The closure plan submitted to Ohio EPA by Ashland Chemical Company is hereby approved with the following modifications:

1. If the tank excavation is determined to be unstable by either Ashland personnel or the registered professional engineer and confirmed by Ohio EPA, four (4) perimeter soils samples shall be taken at mid-depth.

I certify this to be a true and accurate copy of the official document as filed in the records of the Ohio Environmental Protection Agency.

By Richard F. Celeste Date 6/30/88

Ohio Environmental Protection Agency
ENTERED DIRECTOR'S JOURNAL

JUN 30 1988

2. The Toxicity Characteristic Leaching Procedure (TCLP) contaminant levels are not acceptable clean levels. The clean levels shall be the analytical detection limit for any RCRA regulated waste solvent using methods contained in USEPA Publication SW-846.
3. The original closure plan (received January 8, 1988) states that the solvents in the tank "consist of toluene, xylene, MEK, and possibly other ignitable solvents which are listed and not listed." Unless Ashland Chemical can determine exactly what F003 and F005 constituents were stored in the tank, the soil samples shall be tested for all F003 and F005 constituents.

Please be advised that approval of this closure plan does not release Ashland Chemical Company from any responsibilities as required under the Hazardous and Solid Waste Amendments of 1984 regarding corrective action for all releases of hazardous waste or constituents from any solid waste management unit, regardless of the time at which waste was placed in the unit.

Due to the fact that the Ohio EPA is not currently authorized to conduct the federal hazardous waste program in Ohio, your closure plan also must be reviewed and approved by USEPA. Federal RCRA closure regulations (40 CFR 265.112) require that you submit a closure plan to George Hamper, Chief, Waste Management Division, Technical Programs Section, Ohio Unit, USEPA, Region V, 5HS-13, 230 South Dearborn Street, Chicago, Illinois 60604. Approval by both agencies is necessary prior to commencement of activities required by the approved closure plan. If closure activities will, of necessity, take longer than 180 days to complete in order to allow for a period of time for review and approval by USEPA, a longer closure period is hereby approved pursuant to OAC rule 3745-66-13(B) provided Ashland Chemical Company shall commence closure upon receipt of this approval by Ohio EPA or upon receipt of approval by USEPA, whichever occurs later. The closure period shall not exceed 180 days beyond the latter approval.

You are notified that this action of the Director is final and may be appealed to the Environmental Board of Review pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Environmental Board of Review within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency and the Environmental Enforcement Section of the Office of the Attorney General within three (3) days of filing with the Board. An appeal may be filed with the Environmental Board of Review at the following address: Environmental Board of Review, 236 East Town Street, Room 300, Columbus, Ohio 43266-0557.

I certify this to be a true and accurate copy of the official document as filed in the records of the Ohio Environmental Protection Agency.

Ohio Environmental Protection Agency
ENTERED DIRECTOR'S JOURNAL

By: John J. Connelly Date 6/30/88

JUN 30 1988

**ATTACHMENT C: OHIO EPA CONFIRMATION OF CLEAN CLOSURE
FOR THE UNDERGROUND STORAGE TANK**



FILE COPY

State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

Richard F. Celeste
Governor

MEMORANDUM

TO: Thomas Crepeau, DSHWM, CO *TC*
FROM: Chris M. Hartford thru Lundy Adelsberger, DSHWM, CDO
SUBJECT: Certification of Partial Closure for Ashland Chemical (Dublin) -
Underground Tank [OHDO42311209/01-25-0118]

DATE: June 21, 1989

On June 19, 1989, DSHWM, CDO inspected Ashland's Dublin facility to determine if closure of an underground tank was conducted in accordance with the closure plan and conditions of approval. The Director of the Ohio EPA approved the plan conditionally on June 30, 1988. Certification of closure was received in this office June 15, 1989.

Based on the June 19, 1989 site inspection, a review of documents submitted to this office, and past site inspections, it appears that the closure was conducted in accordance with the approved closure plan. This was a partial closure as the facility still operates a permitted container storage area.

CMH/LA/sc

cc: Randy Meyer, DSHWM, CO

0013m/6



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

Richard F. Celeste
Governor

August 16, 1989

Re: Ashland Chemical
US EPA ID No.: OHD042311209
Ohio Permit No.: 01-25-0118
Completion of Closure Process

Ashland Chemical
Attn: Mr. Michael Muller
5200 Paul G. Blazer Memorial Parkway
Dublin, Ohio 43017

Dear Mr. Muller:

According to our records, all necessary activities have been completed at your facility regarding closure of your underground storage tank. Therefore, this letter is to inform you that, based on the information you had submitted and an investigation by Agency staff, you have gone through formal closure and will maintain the status of a facility that treats, stores or disposes of hazardous waste.

You should continue to use the identification number assigned to you by U.S. EPA for purposes of compliance with Ohio EPA manifest, recordkeeping and reporting requirements for generators and transporters of hazardous waste as appropriate.

Should you have any questions concerning your current status, please contact the Ohio EPA, Central District Office, Attn: Chris Hartford, 2305 Westbrooke Drive, Building C, Columbus, Ohio 43228, tel.: (614) 771-7505.

Please note that you must notify U.S. EPA of your change in status, if you have not already done so.

Should you have further questions concerning this procedure, please call Patrick Willoughby, Data Management Section at (614) 644-2977.

Very truly yours,

Thomas E. Crepeau

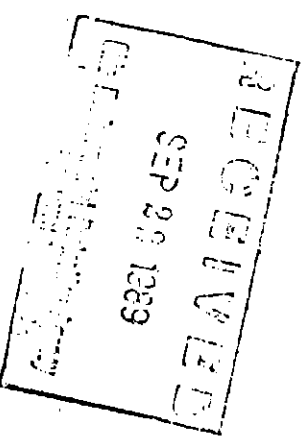
Thomas E. Crepeau, Manager
Data Management Section
Division of Solid and Hazardous Waste Management

TC/PW/ds

cc: Lisa Pierard, U.S. EPA, Region V
Hazardous Waste Facility Board
Dave Sholtis, RCRA Enforcement, DSHWM

Randy Meyer, TA&ES, DSHWM
Chris Hartford, CDO, DSHWM
Dan Hankett, AGO

Yec/Hu



**ATTACHMENT D: NOTICE OF DEFICIENCY AND LETTER OF WARNING
(PART B APPLICATION)**



State of Ohio Environmental Protection Agency

O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020 Fax (614) 644-2329

Richard F. Celeste
Governor

CERTIFIED MAIL

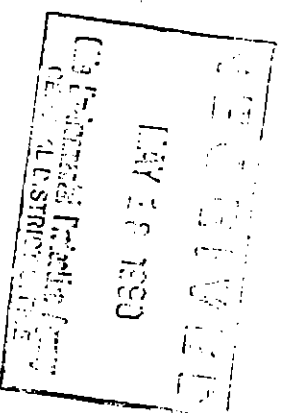
RE: Ashland Chemical Co. (Dublin)
Re # OH0 042 311 209
OHIO 01-25-0118

May 15, 1990

Andrew Kolarsky
Ashland Chemical, Inc.
P.O. Box 2219
Columbus, Ohio 43216

Dear Mr. Kolarsky:

Thank you for submitting Part B of the Resource Conservation and Recovery Act (RCRA) permit application for your facility.



As you may know, Ohio has been delegated authorization to operate its hazardous waste management program in lieu of the Federal hazardous waste program. Ohio now has the responsibility for issuing Resource Conservation and Recovery Act (RCRA) permits for hazardous waste treatment, storage and disposal facilities subject to the authority retained by U.S. EPA under the Hazardous and Solid Waste Amendment of 1984 (HSWA) to RCRA. Since the requirements and prohibitions imposed by HSWA are effective immediately regardless of a State's authorization status, USEPA will continue to implement the applicable HSWA requirements. In other words under HSWA, there will continue to be a dual State/Federal regulatory program in Ohio. To the extent Ohio's authorized program is unaffected by HSWA, the Ohio program will operate in lieu of the Federal program. To the extent HSWA-related requirements are in effect, USEPA will continue to administer and enforce those portions of HSWA in Ohio (which may include the issuance of full or partial permits) until Ohio receives authorization to do so and until that time, Ohio will continue to assist USEPA's implementation of the HSWA requirements under a cooperative agreement.

The Ohio EPA Division of Solid and Hazardous Waste Management has conducted a "completeness" review of your Part B application and has determined it to be incomplete. This application has been reviewed pursuant to the rules published in the Hazardous Waste Facility Standards Chapter in the Ohio Administrative Code.

We have enclosed comments that are the result of this review. Please provide detailed information addressing all areas indicated on the comment sheets to

Mr. Kolarsky
Page 2

Ohio EPA within 45 days of the date of receipt of this correspondence. This submission shall be in accordance with the following editorial protocol or convention:

1. Old language is over-struck.
2. New language is capitalized
3. Page headers should indicate date of submission.
4. If significant changes are necessary, pages should be re-numbered, table of contents revised, and complete sections provided as required.

Please send one copy each to:

Tom Crepeau,
Ohio EPA, DSHMM
1800 WaterMark Drive
P.O. Box 1049
Columbus, Ohio 43266-0149

Chris Hartford,
Ohio EPA, DSHMM, CDO
2305 Westbrooke Drive
P.O. Box 2198
Columbus, Ohio 43266-2198

Lisa Pierard,
RCRA Activities
Part B Application
U.S. EPA - Region V
230 South Dearborn Street
Chicago, Illinois 60690-3587

Upon receipt of a satisfactory response regarding all the information requested, Ohio EPA will notify you in writing that the application is complete. Our determination of completeness will mean that all items required by regulation appear to have been addressed in your application, but does not mean that these items have been addressed substantively or in adequate detail which would allow a determination to be made as to whether the proposal complies with the Director's Hazardous Waste Facility Standards Chapters. We may request additional information from you, if it is necessary to clarify, modify or supplement previous submissions of information in order to substantively evaluate the permit application for technical adequacy.

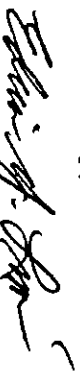
Mr. Kolarsky
Page 3

Failure to submit a complete permit application or to correct deficiencies in the application may result in the following: 1) revocation of your existing Ohio Hazardous Waste Facility Installation and Operation Permit, 2) denial of the application for a renewal permit, 3) referral of the matter to the Ohio Attorney General's Office for appropriate enforcement action.

If you have any questions concerning the review of the permit application, or the level of detail we expect, please do not hesitate to contact Chris Hartford at (614) 771-7505. We also recommend that the Facility contact the above referenced person, and discuss each of the enclosed comments in order to make clear the information being requested. This can be accomplished by a conference call or meeting.

Finally, as you may know, Ohio's hazardous waste law was recently amended to authorize the Attorney General to conduct background investigations on permittees and applicants for permits for hazardous waste treatment, storage and disposal facilities. Every applicant must file a disclosure statement with both the Ohio EPA and the Attorney General on a form developed by the Attorney General, at the same time that the applicant files his hazardous waste permit application with the Ohio EPA (ORC 3734.42(A)). The disclosure statement and the investigative report provided by the Attorney General will form a basis along with the complete and technically adequate permit application for the State's determination on the permit renewal. If there are questions concerning the disclosure statement please contact Paula Cotter, of the OAG at (614) 466-2766.

Yours truly,



Edwin Y. Lim, Manager
Engineering Section
Division of Solid and Hazardous Waste Management

EYL/SKN/pas

cc: Lisa Pierard, USEPA
Joel Morbito, USEPA
Robert Babik, CO, DSHWM, Ohio EPA
Susan K. Nitecki, CO, DSHWM, Ohio EPA
Chris Hartford, COO, DSHWM, Ohio EPA
Central File

1999U

COMMENTS ON ASHLAND R & D

A. PART A APPLICATION

1. Section A Part A Application [OAC 3745-50-41, 3745-50-43/40 CFR 270.10, 270.13]:

The Part A application must be revised to address treatment of hazardous waste in Tanks 8 & 9 and the mixing unit in the South Bay Area.

B. FACILITY DESCRIPTION

2. B-2A Topographic Map [OAC 3745-50-44(A)(19)/40 CFR 270.14(b)(19)]:

A topographic map meeting the requirements of this rule must be provided. No topographic map(s) and no appendix was found in the application.

3. B-3b thru B-3b(3) Floodplain Standard [OAC 3745-50-44(A)(11), 3745-54-18(B)/40 CFR 270.14(b)(11), 264.18(b)]:

The most current Flood Insurance Rate Map or a copy of the map must be provided. All other applicable sections i.e. flood plan etc., must be addressed in the application.

C. WASTE CHARACTERISTICS

4. C-1, C-1B WASTE ANALYSIS [OAC 3745-50-44(A)(2), 3745-54-13(A), 3745-55-91(B)(2), 3745-55-92(A)(2)/40 CFR 270.14(b)(2), 264.13(a), 264.191(b)(2), 264.192(a)(2)]:

Ashland must include laboratory results detailing the chemical and physical analyses of representative samples of each of the four (4) waste types necessary to store and, if applicable, treat the wastes. These sections must also address waste analysis regarding Tanks 8 & 9 and the mixing unit in the South Bay Area.

5. C-2e Off-Site Wastes [OAC 3745-54-13(C)/40 CFR 264.13(c)]:

Ashland must address how wastes generated off-site will be managed, if applicable, in compliance with OAC 3745-54-13(C).

6. C-2f Ignitable, Reactive and Incompatible Wastes [OAC 3745-54-13(B)(6), 3745-54-17/40 CFR 264.13(b)(6), 264.17]:

Ashland must address waste analysis requirements for ignitable, reactive and incompatible wastes.

7. C-3a thru C-3d(4) Waste Analysis Pertaining to Land Disposal Restrictions [40 CFR 264.13, 268]:

Ashland must address applicable land disposal restrictions requirements.

D. PROCESS INFORMATION

8. D-1a(3) Secondary Containment for Containers [OAC 3745-50-44(C)(1)(a)(i), (c) & (d), OAC 3745-55-75(A) & (D)/40 CFR 270.15(a)(1), (c) & (d), 264.175 (a) & (d)]:

Neither the drawing or an appendix showing the secondary containment system design was found in the application. These must be included.

9. D-1a(3)(a) Requirement for the Base or Liner to Contain Liquids [OAC 3745-50-44(C)(1)(a), 3745-55-75(B)(1)/40 CFR 270.15(a), 264.175(b)(1)]:

Ashland must include a statement that the base is free of cracks and gaps and will be maintained as such, a demonstration of the imperviousness of the base to wastes and precipitation, an engineering evaluation of the structural integrity of the base and a discussion of the compatibility of the base with wastes.

10. D-2 thru D-2g Tank Systems [OAC 3745-50-44(C)(2), 3745-55-90 thru 94/40 CFR 270.16, 264.190 thru 194]:

Ashland must address applicable tank system requirements for Tanks Nos. 8 & 9 used to treat hazardous waste. If the mixing unit in the South Bay Area meets the definition of a container all rules applicable to container storage areas must be addressed as well as other applicable regulations. If it meets the definition of a tank these rules must be addressed. All reference to the underground tank should be omitted since this unit has been closed.

F. PROCEDURES TO PREVENT HAZARDS

11. F-1 THRU F-1B(2) SECURITY [OAC 3745-50-44(A)(4), 3745-54-14/40 CFR 270.14(b)(4), 264.14]:

Ashland must address applicable requirements regarding security procedures and equipment for all units.

12. F-2a General Inspection Requirements [OAC 3745-54-33, 3745-54-15(C) & (D)/40 CFR 264.33, 264.15(c) & (d)]:

Ashland must address compliance with the above mentioned rules which concern the testing and maintenance of equipment, remedial action and recordkeeping.

13. F-2b(2) thru F-2b(f) Tank System Inspection [OAC 3745-55-95/40 CFR 264.195]:

Ashland must address tank system inspection requirements for Tanks 8 and 9 and the mixing unit, if applicable. Reference to the underground tank should be omitted.

14. F-4a thru F-4d Preventive Procedures, Structures and Equipment [OAC 3745-50-44(A)(8)/40 CFR 270.14(b)(8)]:

Ashland must address procedures, structures and equipment to prevent hazards with respect to Tanks 8 and 9 and the mixing unit, where applicable.

15. F-5a & b Ignitable, Reactive and Incompatible Wastes [OAC 3745-50-44(A)(9), 3745-54-17/40 CFR 270.14(b)(9), 264.17]:

Ashland must address general requirements regarding ignitable, reactive and incompatible wastes for Tanks 8 and 9 and the mixing unit.

16. F-5e & f Ignitable, Reactive and Incompatible Wastes in Tank Systems [OAC 3745-50-44(C)(2)(j), 3745-55-98, 3745-55-99(B)/40 CFR 270.16(j), 264.198, 264.199(b)]:

Ashland must address specific requirements regarding ignitable, reactive and incompatible wastes for Tanks 8 and 9 and the mixing unit, if applicable.

G. CONTINGENCY PLAN

17. G-4h Post-Emergency Equipment Maintenance [OAC 3745-54-56(H)(2)/40 CFR 264.56(h)(2)]:

Ashland must address requirements concerning post-emergency equipment maintenance.

I. CLOSURE AND POST-CLOSURE REQUIREMENTS

18. I-1a thru I-1c(2) Closure Requirements [OAC 3745-50-44(A)(13), 3745-55-11, 3745-55-12, 3745-55-14/40 CFR 270.14(b)(13), 264.111, 264.112, 264.114]:

Ashland must address closure requirements with respect to Tanks 8 and 9 and the mixing unit.

19. I-1f Schedule for Closure [OAC 3745-55-12(B)(6)/40 CFR 264.112(b)(6)]:

A schedule for closure must be provided for Tanks 8 and 9 and the mixing unit.

20. I-4 Cost Estimate for Closure [OAC 3745-50-44(A)(15), 3745-55-42/40 CFR 270.14(b)(15), 264.142]:

The cost estimate for closure must be revised to address Tanks 8 and 9 and the mixing unit.

J. CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

21. J-1 thru J-2b Corrective Action [40 CFR 264.101]:

Ashland must address applicable corrective action requirements.

22. The application should be revised to match the latest Part B review checklist (Revision 7, 8/89). All reference to the underground storage tank must be omitted since this unit has been closed. Tanks 8 and 9 and the mixing unit in the South Bay Area must be addressed in all applicable sections.

23. Ashland currently has a water supply well which is located on the hazardous waste storage pad. In order for CDO to recommend approval of the application either the well or the storage pad must be relocated. Reasons for this are as follows:

- Due to the location of the well inside the storage area the potential risk of contaminating the well and/or aquifer is too great to be protective of human health and the environment.
- Requirements associated with the proposed Ohio Safe Drinking Water Bill will not allow a water supply system serving over 500 people to be located in the immediate vicinity of a potential source of contamination.

COMMENT ON ASHLAND R & D
PAGE 5

- For a non-transient ground water supply well that delivers 200,000 gpd or more to meet current siting criteria it must be located at least 300 feet from potential sources of contamination.

ASHLAND
CHRIS



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

CERTIFIED MAIL

May 31, 1991

FACILITY: Ashland Chemical (Dublin)
LETTER OF WARNING
OHIO ID: 01-25-0118
USEPA ID: OHD 042 311 209

Mr. Jeffrey Kirk

Environmental Engineer
Ashland Chemical Incorporated

P.O. Box 2219
Columbus, Ohio 43216

Dear Mr. Kirk:

RECEIVED
MAY 31 1991
OHIO EPA/CDO

On May 15, 1990, the Ohio EPA transmitted to you a Notice of Deficiency (NOD) letter pursuant to a completeness review of the Ashland Chemical Dublin Part B permit application. A response to the comments of this NOD was due on or about July 2, 1990. In a letter dated June 26, 1990, you requested an extension of the due date to July 31, 1990. In the same letter you asked Ohio EPA to again address the issue of treatment in 90 days or less accumulation units as it directly affects Ashland Chemical Dublin's RCRA permitting status. For the reasons given in item #3 of your letter, you stated why you disagreed with the Ohio EPA's interpretation of the rule as presented to you in a meeting held September 6, 1989. Due to any confusion generated by Ohio EPA's position on the treatment issue, Ashland Chemical Dublin was both granted a generous extension to September 5, 1990 and the treatment issue, as it applied to your facility, was specifically addressed in a letter from Mr. Ed Lim, RCRA Engineering Section Manager, dated August 6, 1990.

Once again in a letter dated August 13, 1990, you stated your disagreement with Ohio EPA's interpretation of the rule using the same reasons and language previously presented in your letter of June 26, 1990, which Mr. Lim responded to on August 6, 1990. I personally addressed your August 13, 1990 inquiry through a statement and defense of Ohio EPA's position on the issue of regulating treatment of hazardous waste which occurs in accumulation tanks.

As of May 29, 1991, Ohio EPA has received no response either to the NOD dated May 15, 1990, or those concerns presented by Mr. Lim in the August 6, 1990 correspondence. Due to Ashland Chemical Dublin's outstanding failure to respond, the Ohio EPA must provide notice and warning that failure to correct



Printed on recycled paper

Mr. Jeffrey Kirk
Page 2

deficiencies in the application is a violation of OAC 3745-50-40(I) and may result in 1) the assessment of a civil penalty against the applicant, 2) revocation of any existing permit, 3) denial of the application for renewal permit, or 4) referral of the matter to the Ohio Attorney General's Office for appropriate enforcement action.

Please provide detailed information addressing all areas indicated on the comment sheets provided with the May 15, 1990 NOD to Ohio EPA within 30 days of the date of receipt of this correspondence. This submission shall be in accordance with the following editorial protocol or convention:

1. Old language is overstruck.
2. New language is capitalized.
3. Page headers should indicate date of submission.
4. If significant changes are necessary, pages should be renumbered, table of contents revised, and complete sections provided as required.

Please send one copy each to:

Tom Crepeau
Ohio EPA, DSHWM
1800 WaterMark Drive
P.O. Box 1049
Columbus, Ohio 43266-0149

Lisa Pierard
RCRA Activities
Part B Application
U.S. EPA - Region V 5HR-13
230 South Dearborn Street
Chicago, Illinois 60604

Please send two copies to:

Chris Hartford
Ohio EPA, Central District Office
2305 Westbrooke Drive, Bldg. C
P.O. Box 2198
Columbus, Ohio 43228

In lieu of a complete and adequate Part B application, Ashland Chemical Dublin may submit a plan for closure and a statement of the owner or operator's intent to cease handling hazardous waste in a manner which requires you to hold a Hazardous Waste Facility Permit.

Please note that if all comments are not adequately addressed or a closure plan is not forthcoming by the due date required in this letter of Warning, I will proceed to provide the Director with a recommendation on initiating a formal enforcement action in this matter.

Mr. Jeffrey Kirk
Page 3

The Ohio EPA also requests that the facility contact Chris Hartford of the Central District Office at (614) 771-7505 within ten days of receipt of this letter to make your intentions in pursuing a Part B permit for this facility known, and to discuss each of the NOD comments in order to make clear the information being requested and the level of detail expected. This can best be accomplished through a conference call or meeting.

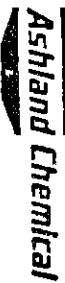
Sincerely,

David A. Stoll

for Linda Welch, Chief
Division of Solid and Hazardous Waste Management

cc: Lisa Pierard, U.S. EPA
Joel Morbito, U.S. EPA
Ed Lim, CO, DSHWM, Ohio EPA
Tehnton Toorkey, CO, DSHWM, Ohio EPA
Frank Basting, CO, DSHWM, Ohio EPA
Pam Allen, CO, DSHWM, Ohio EPA
Chris Hartford, CDO, DSHWM, Ohio EPA
Central File

**ATTACHMENT E: LETTER TO REQUEST WITHDRAWAL OF HAZARDOUS WASTE
FACILITY PERMIT APPLICATION**



Environmental, Health & Safety

G. W. Hammer
Director
(614) 889-3052

Ashland Chemical, Inc.
Subsidiary of
Ashland Oil, Inc.

Address Reply:
P.O. Box 2219
Columbus, Ohio 43216

Ms. Linda Welch
Ohio EPA
Division of Solid and Hazardous Waste Management
1800 WaterMark Drive
Columbus, Ohio 43266-0149

Dear Ms. Welch:

This is in response to your letter dated May 31, 1991, pertaining to the Ashland Chemical, Inc., Research & Development facility located in Dublin, Ohio. In the aforementioned letter you presented a chronology of the correspondence between Ashland and the Ohio EPA with respect to the issue of treatment of hazardous waste in accumulation tanks. However, you failed to mention the January 24, 1991 letter from Edwin Lim (which is included with this submittal), of your staff, to Martin Seltzer, of Porter, Wright, Morris and Arthur. Mr. Lim's January 24, 1991 correspondence stated that "Our current view is that blending of solvents with waste resins would not constitute treatment so long as all the hazardous waste is ultimately burned as fuel for energy recovery in boilers or industrial furnaces." It appears that Ohio EPA does not believe that Ashland's blending operations are considered to be a form of treatment that requires a permit.

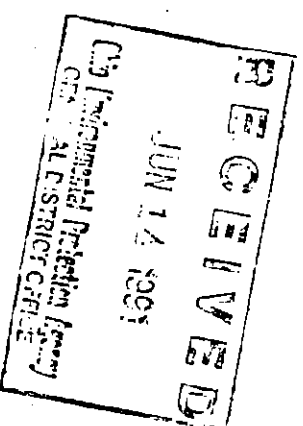
Since the "treatment issue" has been resolved, Ashland will not need to pursue a Hazardous Waste Facility Permit for its Dublin operations and is hereby withdrawing its Hazardous Waste Facility Permit application. Therefore, the closure plan for the interim status hazardous waste container storage area located at the facility is being submitted to the persons identified in your May 31, 1991 letter. It is Ashland's intent to cease handling hazardous waste in a manner which requires us to hold a Hazardous Waste Facility Permit.

On June 5, 1991 Chris Hartford of the Ohio EPA Central District Office was contacted by Ashland and informed that Ashland was not going to pursue a Hazardous Waste Facility Permit. Ashland's intentions were clearly stated in my August 13, 1990 letter addressed to you.

If you have any questions or comments, please do not hesitate to contact me at (614) 889-3025.

Sincerely,

Jeffrey J. Kirk
Environmental Engineer



Headquarters
5200 Blazer Parkway
Dublin, Ohio 43017

Cable Address: Arophez OH
Telex: 245385
Answerback: ASHCH-EM
Fax: (614) 889-3461
(614) 889-4250

E-2



Ashland Chemical's
Commitment to
Quality and Productivity

cc: C. Hartford, OEPA-CDO
T. Crepeau, OEPA-CO
L. Pierard, USEPA Region V
T.J. Weeks
M. Mullier
J.W. Boone
M. Selzer, Porter, Wright, Morris and Arthur
AJK/GWH/R&D/Dublin - Waste

ATTACHMENT F: ASHLAND VICINITY WELL LOGS

ORIGINAL

DEPARTMENT OF NATURAL RESOURCES

2057

Division of Water
65 S. Front St., Rm. 815 Phone (614) 469-2646

Phone (614) 469-2646

OWNER Conte John W ADDRESS 9001 Beverly Rd Buckle B

Address 7001 Westinghouse Boulevard

Location of property Shirts, Rings and Wilcox Rd S.E. Corner

BAILING OR PUMPING TEST
(Specify one by circling)

Casing diameter 4 1/4 Length of casing 107

Test Rate / 8 G.P.M. Duration of test 4 hrs.

Type of screen None Length of screen

Drawdown None ft. Date 2/20/10

Time of arrival

Static level-depth to water.....2.2 ft

Capacity of pump

Quality (clear, cloudy, taste, odor).....

Depth of pump setting 21 pumps at 30

7-17

Date of completion.

Pump installed by 1-2004

SKETCH SHOWING LOCATION

Formations
Sandstone, shale, limestone,

From

○

Z.

Locate in reference to numbered highways, St. Intersections, County roads, etc.

Day

0 Feet

10/It

Sand & gravel

7

64

IV.

F

20/11/2020

- well

Shirring Pot

Drilling Firm Lehigh Valley Drilling Date 3/20/2014

Sept 10/73

Address

Signed

5871 Brand Rd

Dr. Thos. C. Lawrence

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

ORIGINAL

NO CARBON PAPER
NECESSARY—

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water

No. 383006

SELF-TRANSCRIBING

65 S. Front St., Rm. 815
Columbus, Ohio 43215

County Franklin Township Washington Section of Township Rt 33 + Wilcox Rd.
Owner Int'l. - The Diller Company Address 15404 Market St. Akron, OH
Location of property S.E. Corner of Rt 33 + Wilcox Rd Dullin, OH

CONSTRUCTION DETAILS

Casing diameter 8" I.D. Length of casing 203'
Type of screen None Length of screen
Type of pump 3HP Submersible
Capacity of pump Approx 75 gal Per min
Depth of pump setting 105'
Date of completion Oct 30/68

BAILING OR PUMPING TEST (Specify one by circling)

Test Rate 40 G.P.M. Duration of test 22 hrs.
Drawdown None ft. Date Oct 30/68
Static level-depth to water 30 ft.
Quality (clear, cloudy, taste, odor) Clear
Pump installed by Installed with test pump

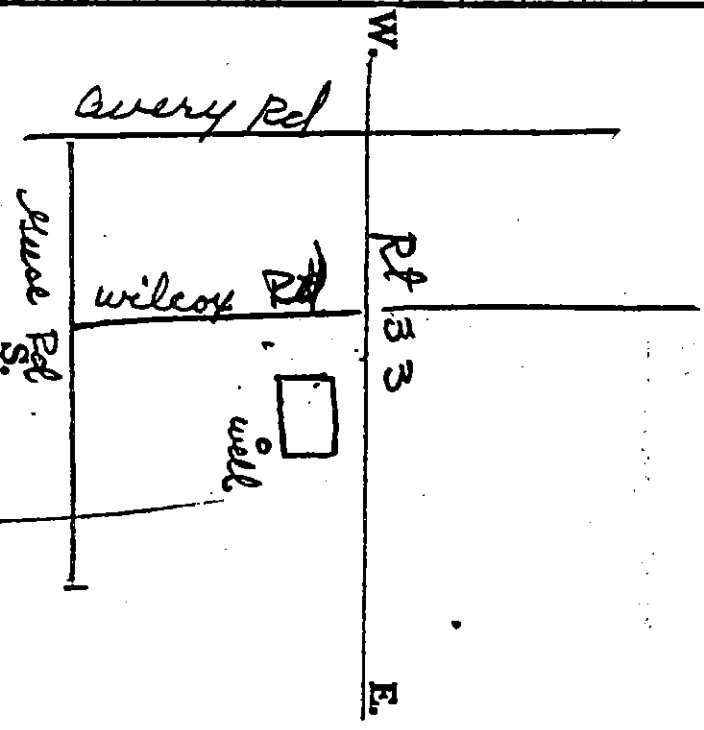
WELL LOG*

SKETCH SHOWING LOCATION

Formations Sandstone, shale, limestone, gravel and clay
From To
State Highways, St. Intersections, County roads, etc.

Clay	0 Feet	39 Ft.
Sand + Clay	39	43
Clay	43	60
Sand + gravel	60	63
Clay	63	71
Sand + gravel	71	75
Clay + gravel	75	150
Sand + gravel	150	191
Loose limestone	191	208

N.



Drilling Firm Arthur E. Plummer and Son Date Oct 30/68

Address 5871 Brand Rd

Signed Arthur E. Plummer

*If additional space is needed to complete well log, use next consecutive numbered form.

County Permit No.

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio

563834

204

NO CARBON PAPER

NECESSARY -

SELF-TRANSCRIBING

DEPARTMENT OF NATURAL RESOURCES

Division of Water

Fountain Square

Columbus, Ohio 43224

COUNTY Franklin TOWNSHIP Washington SECTION OF TOWNSHIPOWNER Dryden Lane

ADDRESS

1028 Poppleton Road
Northampton OhioLOCATION OF PROPERTY 5774 Shinn Binger

CONSTRUCTION DETAILS

Casing diameter 5 1/8" Length of casing 30

Type of screen _____ Length of screen _____

Type of pump _____

Capacity of pump _____

Depth of pump setting _____

Date of completion _____

(BALING OR PUMPING TEST
specify one by circled)Test rate 20 gpm Duration of test _____ hrsDrawdown none ft Date _____Static level (depth to water) 17 ft

Quality (clear, cloudy, taste, odor) _____

Pump installed by _____

WELL LOG*

Formations: sandstone, shale,
limestone, gravel, clay

From

To

0 ft

19 ft

Clay

19

28

hard shale

28

30

hard to work

SKETCH SHOWING LOCATION

Locate in reference to numbered
state highways, street intersections, county roads, etc.

N

State Route 33wellShinn Binger Rd

W

E

S

DRILLING FIRM Don Chatham & Son DATE May 13 1980
ADDRESS Route 2 South in Ohio SIGNED Billy D. Chatham

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

ORIGINAL

37515

PLEASE USE PENCIL

OR TYPEWRITER

DEPARTMENT OF NATURAL RESOURCES

NO 372363

Division of Water

1562 W. First Avenue

Columbus, Ohio 43212

DO NOT USE INK

County Franklin Township Washington Section of Township Grease Rd.Owner Horsien Eng. Co Address Col. DLocation of property N. Side of Grease Rd. E. of Wilson St 161

CONSTRUCTION DETAILS

Casing diameter 6" I.D. Length of casing 135

Type of screen metal Length of screen

Type of pump 3 H.P. Submersible

Capacity of pump approx 75 gal Per min

Depth of pump setting 105 ft.

Date of completion Mar. 19/68

BAILING OR PUMPING TEST

Pumping Rate 36 G.P.M. Duration of test hrs.

Drawdown 10 ft. Date Mar. 19/68

Static level-depth to water 10 ft.

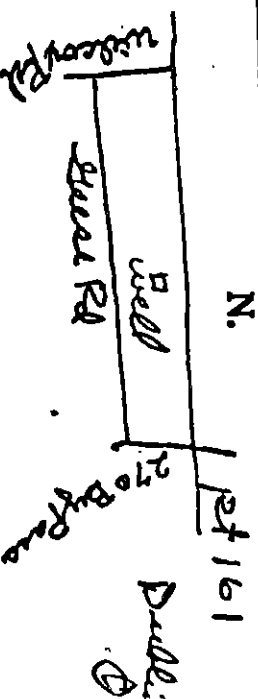
Quality clear, cloudy, taste, odor

Pump installed by Treated by Bailing

WELL LOG*

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



Formations Sandstone, shale, limestone, gravel and clay	From	To	
<u>Clay</u>	<u>0 Feet</u>	<u>20 Ft.</u>	
<u>Clay + gravel</u>	<u>20</u>	<u>30</u>	
<u>Clay</u>	<u>30</u>	<u>58</u>	
<u>Sand + gravel</u>	<u>58</u>	<u>70</u>	
<u>Clay</u>	<u>70</u>	<u>81</u>	
<u>Limestone</u>	<u>81</u>	<u>85</u>	
<u>Clay</u>	<u>85</u>	<u>87</u>	
<u>Limestone</u>	<u>87</u>	<u>96</u>	
<u>Clay</u>	<u>96</u>	<u>100</u>	
<u>Limestone</u>	<u>100</u>	<u>117</u>	
<u>Clay</u>	<u>117</u>	<u>121</u>	
<u>Limestone</u>	<u>121</u>	<u>125</u>	
<u>Clay</u>	<u>125</u>	<u>128</u>	
<u>Limestone</u>	<u>128</u>	<u>158</u>	

Well is cased with 8" casing
W. to limestone - cased to
131 ft with 6" I.D.
all clay is cased out
6" Pitless Adapter used

S.

See reverse side for instructions

Drilling Firm Arthur E. Plummer and Son Date Mar. 19/68Address 5871 Grand Rd Signed Arthur E. PlummerDublin, Ohio

*If additional space is needed to complete well log, use next consecutive numbered form.

488696

F-8

WELL LOG AND DRILLING REPORT

ORIGINAL
2012

NO CARBON PAPER
NECESSARY—
SELF-TRANSCRIBING
DEPARTMENT OF NATURAL RESOURCES
Division of Water
65 S. Front St., Rm. 815
Columbus, Ohio 43215

444712

County Franklin Township Madison Section of Township Shirlington Rd
Owner (Caleb) Hardin Inc Address 14451 West Goodale Rd
Location of property East end of Shirlington Rd. N. Side

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 40'
Type of screen Welded Length of screen
Type of pump
Capacity of pump
Depth of pump setting Set Pump at 150'
Date of completion Dec 1 1972

BAILING OR PUMPING TEST

(Specify one by circling)

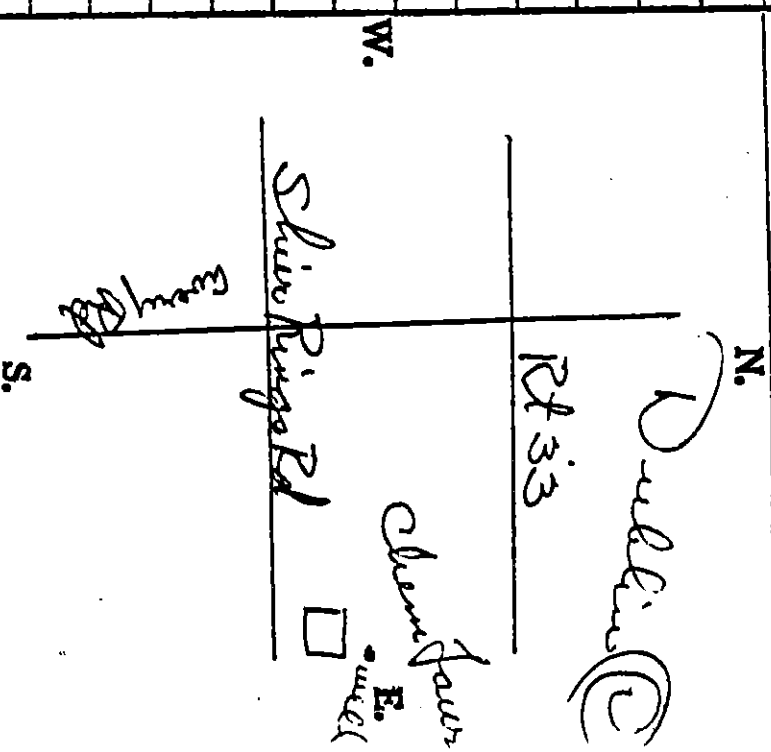
Test Rate 36 G.P.M. Duration of test 3 hrs
Drawdown 42 ft. Date Dec 1 1972
Static level-depth to water 10 ft
Quality (clear, cloudy, taste, odor)

Pump installed by Two Tally Boring

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St Intersections, County roads, etc.

Formations Sandstone, shale, limestone, gravel and clay	From	To
<u>Clay gravel</u>	<u>0 Feet</u>	<u>40 Ft.</u>
<u>limestone</u>	<u>40</u>	<u>172</u>
<u>(92' of 16" casing well double)</u>		
<u>Good.</u>		



Drilling Firm Arthur D. Dummer and Son Date Dec 1 1972
Address 5871 Brand Rd Signed Arthur D. Dummer

*If additional space is needed to complete well log, use next consecutive numbered form.

Earl and
John - King.

613041

DEPARTMENT OF NATURAL RESOURCES

Division of Water

Fountain Square

Columbus, Ohio 43224

SECTION OF TOWNSHIP

SECTION OF TOWNSHIP

ADDRESS 2010 20th St NW

6175 Shamrock

BAILING OR PUMPING TEST
(specify one by circling)

Test rate 60 f gpm

Duration of test one hrs

Drawdown _____ n Date 10/1/11 271

Static level (depth to water) _____

Quality (clear, cloudy, taste, odor) _____

Pump installed by _____

SKETCH SHOWING LOCATION

To

OK 15

16

50

161

Z

Page 33

Play
Send
Day
London

Spill Range

Wilcox

DATE _____

SIGNED

If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224 2/8

WELL LOG AND DRILLING REPORT

State of Ohio

PLEASE USE PENCIL

DEPARTMENT OF NATURAL RESOURCES

OR TYPEWRITER
DO NOT USE INK.Division of Water
1562 W. First Avenue
Columbus, Ohio

No. 228331

County FRANKLIN Township WASHINGTON Section of TownshipOwner BROWN - FASSIGAddress HILLIARD - OHIOLocation of property 5867 Wilcox Rd (Mile 8.2111 at Route 161

CONSTRUCTION DETAILS

Casing diameter 4 1/4" Length of casing 24'
 Type of screen None Length of screen —
 Type of pump DEEP WELL
 Capacity of pump —
 Depth of pump setting 25'
 Date of completion 10-6-59

BAILING OR PUMPING TEST

Pumping rate 25 G.P.M. Duration of test 1 1/2 hrs.
 Drawdown 2 ft. Date 10-6-59
 Developed capacity 25 g.p.m.
 Static level—depth to water 12 ft.
 Pump installed by —

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
<u>Clay</u>	<u>0 Feet</u>	<u>30 Ft.</u>
<u>Sand & gravel</u>	<u>30 Ft.</u>	<u>40 Ft.</u>
<u>Gravel</u>	<u>40 Ft.</u>	<u>41 Ft.</u>
<u>Sand</u>	<u>41 Ft.</u>	<u>65 Ft.</u>
<u>Gravel</u>	<u>65 Ft.</u>	<u>90 Ft.</u>
<u>Sand</u>	<u>90 Ft.</u>	<u>94 Ft.</u>
<u>Gravel</u>	<u>94 Ft.</u>	<u>123 Ft.</u>

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

N.

E.

See reverse side for instructions.

Drilling Firm ELAM CARLIS
 Address 5528 WEST BROAD ST

Date 10-6-59
 Signed Elam Carls

County Permit No.

WELL LOG AND DRILLING REPORT

ORIGINAL

221

564082

NO CARBON PAPER
NECESSARY -
SELF-TRANSCRIBINGState of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224COUNTY Franklin TOWNSHIP Washington SECTION OF TOWNSHIPOWNER Richard MueselADDRESS 5756 Village Rd Dublin OHLOCATION OF PROPERTY Same

CONSTRUCTION DETAILS

Casing diameter 4 1/4 Length of casing 53'Type of screen none Length of screen

Type of pump

Capacity of pump Sift pump at 40'

Depth of pump setting

Date of completion

BAILING OR PUMPING TEST

(specify one by circling)

Test rate 10 gpm Duration of test 2 hrsDrawdown none ft Date June 10/80Static level (depth to water) 30 ft ft

Quality (clear, cloudy, taste, odor)

Pump installed by Scott's well pump

WELL LOG*

Formations: sandstone, shale,
limestone, gravel, clay.

From

To

0 ft

35 ft

Clay
Sand & gravel

35

53

SKETCH SHOWING LOCATION

Locate in reference to numbered
state highways, street intersections, county roads, etc.

N

□ well
5756

W

E

Pingo Rd

S

DRILLING FIRM

Art Plummer & Son

ADDRESS

5871 Grand Rd
Dublin OH

DATE

June 10/80

SIGNED

Art Plummer

*If additional space is needed to complete well log, use next consecutive numbered form.

F-13

304

WELL LOG AND DRILLING REPORT

ORIGINAL

22K15
No 339143

PLEASE USE PENCIL,
OR TYPEWRITER

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water

1562 W. First Avenue
Columbus, Ohio 43212

DO NOT USE INK

County Franklin Township Washington Section of Township 37 34 11 20 21
Owner Walter D. Bailey Address Dublin, Ohio
Location of property 5744 Wilcox Rd.

CONSTRUCTION DETAILS

Casing diameter 4 3/4" Length of casing 123'
Type of screen None Length of screen
Type of pump
Capacity of pump
Depth of pump setting Set Pump at 25 ft
Date of completion

BAILING OR PUMPING TEST

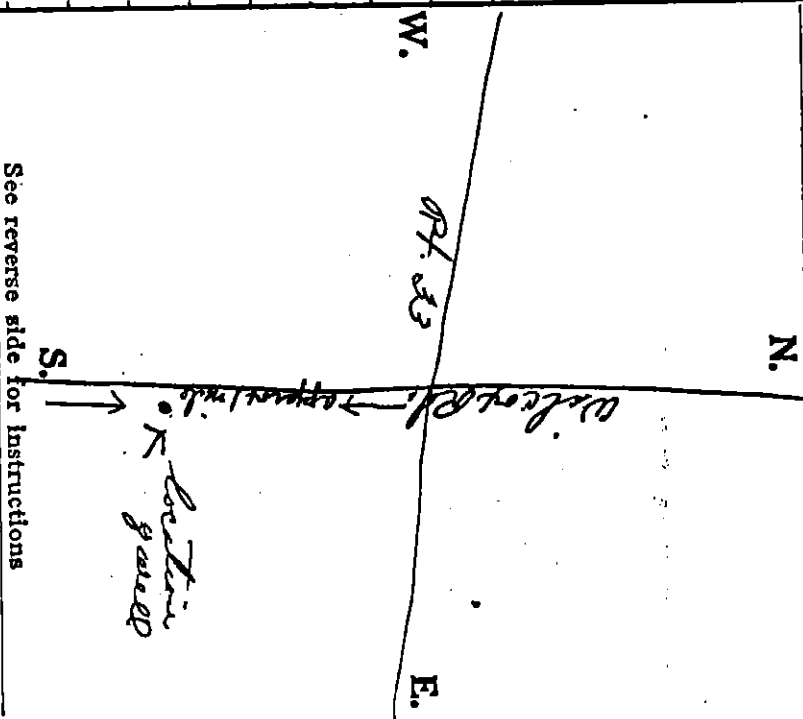
Pumping Rate 20 G.P.M. Duration of test 2 hrs.
Drawdown None ft. Date
Static level-depth to water 17 ft.
Quality (clear, cloudy, taste, odor)
Pump installed by

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
<u>Clay</u>	<u>0 Feet</u>	<u>47 Ft.</u>
<u>sand & gravel</u>	<u>47</u>	<u>50</u>
<u>fine sand</u>	<u>50</u>	<u>61</u>
<u>gravel</u>	<u>61</u>	<u>63</u>
<u>This well log</u>		
<u>replace</u>		
<u>Log No. 339143</u>		

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.



Drilling Firm Plummer Bros

Date Oct. 27/46

Address 53 N. Riverside St.

Signed Walter D. Plummer

*If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL

Nº 339134

State of Ohio
DEPARTMENT OF NATURAL RESOURCES

1562 W. First Avenue
Columbus, Ohio 43212

5744 Wilcox Rd.

BAILING OR PUMPING TEST

Pumping Rate 20 G.P.M. Duration of test 34 hrs.
Drawdown None ft. Date 18
Static level-depth to water _____ ft.
Quality (clear, cloudy, taste, odor) _____
Pump installed by _____

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St Intersections, County roads, etc.

N.

S.

E.

W.

Pt. 33

Mileage Rd → approx. 8.4

Localities

X

Jalap

See reverse side for instructions

Date ~~10/12/66~~ 10/12/66

Signed: Arleta V. Summers

Additional space
*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

ORIGINAL
1656 22
Nº 76376
14

County Franklin Township Washington Section of Township
Owner Leona De Stet Address Amelia Ohio
Location of property Union Creek Rd.

CONSTRUCTION DETAILS

Casing diameter 4 1/2" Length of casing 62'
Type of screen None Length of screens
Type of pump
Capacity of pump
Depth of pump setting
Pumping rate G.P.M. Duration of test hrs.
Drawdown None Date
Developed capacity
Static level—depth to water 15'
Pump installed by Sealed Jay Baalman
PUMPING TEST

WELL LOG

SKETCH SHOWING LOCATION

Formations
Sandstone, shale, limestone, gravel and clay
Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

Shale
sand
Gravel
0 Feet
30.0 ft.
61
62
250 FT. DEPTH

W. 250 FT. DEPTH
S. 250 FT. DEPTH
See reverse side for instructions

Drilling Firm Leona De Stet Date Aug 27/57
Address Amelia Ohio Signed A. H. Baalman

WELL LOG AND DRILLING REPORT

ORIGINAL
225

NO CARBON PAPER
NECESSARY -
SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Geological Survey
Fountain Square
Columbus, Ohio 43224

488585

Phone (614) 466-5344

COUNTY Franklin TOWNSHIP Washington SECTION OF TOWNSHIP
OWNER Aggie Daniel ADDRESS 5700 Wilcox Rd OR LOT NUMBER

LOCATION OF PROPERTY Same

CONSTRUCTION DETAILS

Casing diameter 4 1/2" length of casing 58'
Type of screen none length of screen
Type of pump
Capacity of pump
Depth of pump setting Set pump at 35'
Date of completion Oct 24/75

BAILING OR PUMPING TEST

(specify one by circling)

Test rate 18 gpm Duration of test Oct 24/75 hrs
Drawdown none ft Date Oct 24/75
Static level (depth to water) 20 ft
Quality (clear, cloudy, taste, odor)

Pump installed by Installed by hand pump

WELL LOG*

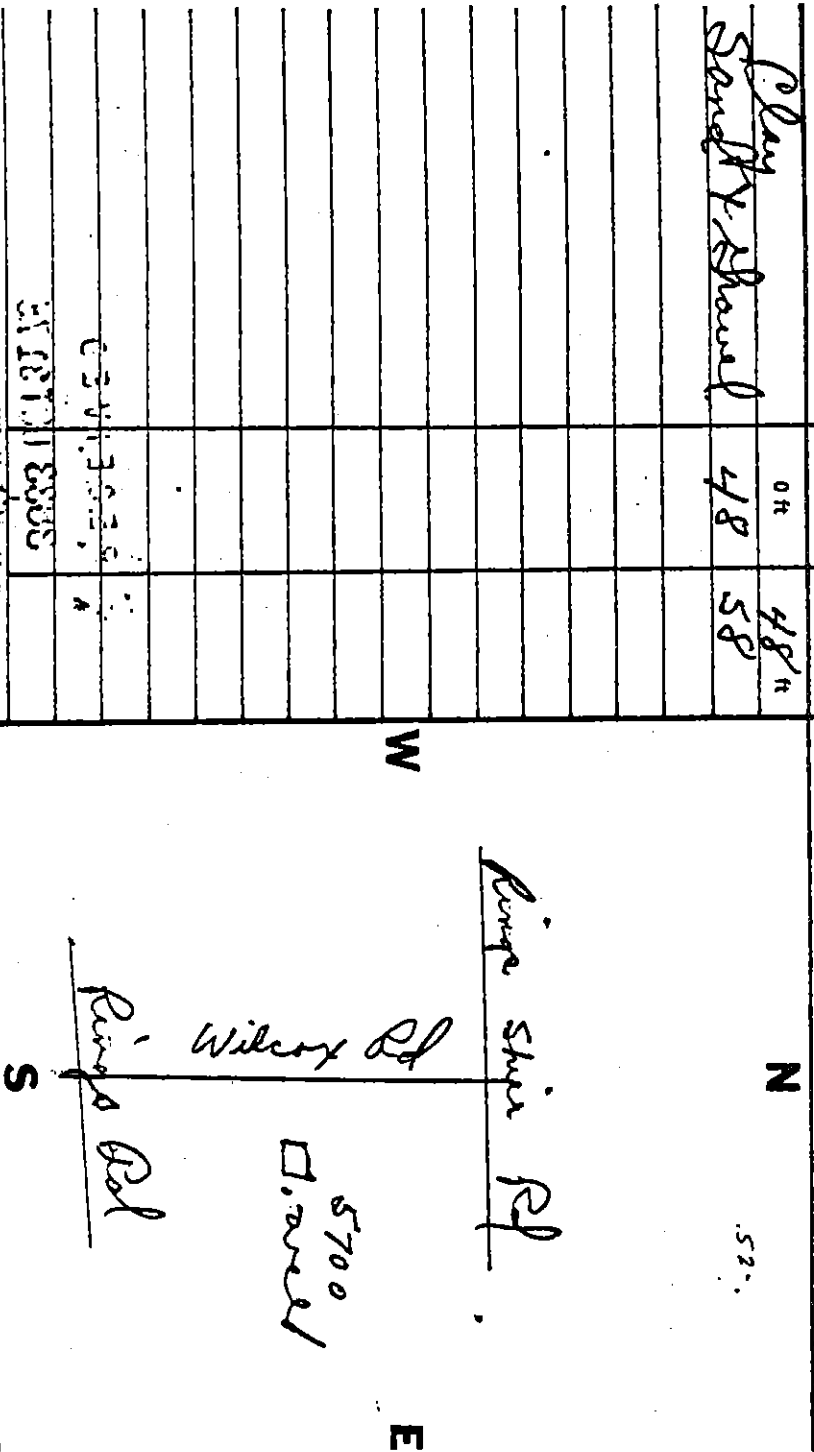
Formations: sandstone, shale,
limestone, gravel, clay

From To

Locate in reference to numbered
state highways, street intersections, county roads, etc.

Clay 0 ft 48 ft
Sandy Shale 48 58

SKETCH SHOWING LOCATION



DRILLING FIRM Arthur E. Plummer DATE Oct 24/75
ADDRESS 5871 Grand Rd Dublin, O. SIGNED Arthur E. Plummer

*If additional space is needed to complete well log, use next consecutive numbered form.

227

494539

OWNER

ADDRESS

SECTION OF TOWNSHIP
OR LOT NUMBER

BAILING OR PUMPING TEST

Specify one by circling

Casing diameter 17 Length of casing 7

Test rate 125 gpm

Publication of test _____

Type of screen 1/4" mesh Length of screen 100'

DOWN _____

Page 10

Type of pump

elastic level (approx. 0.75–1.0)

00

Capacity of pump

auditory (1900, 1902), 1903,

100

Depth of pump setting

SKETCH SHOWING LOCATION

Formations: sandstone, shale, limestone, gravel, clay

From

To

Locate in reference to numbered state highways, street intersections, county roads, etc.

N
-40-

Plan	04	62 th
Sand + Gravel	62	65

0R	62 _H
62	65

King

Well at 5627 A'leop Bl.

Taitee 121.

DRILLING FIRM 11625 James Street
ADDRESS 11625 James Street

DATE 10/1/81
SIGNED Frank T. Miller

DATE Aug 10 1977

ADDRESS

Consent O, Pt-1

• If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL
22k

514830

5100.

SECTION OF TOWNSHIP 5009
S¹¹ Wabasha
T¹ Wabasha

Between Rings 121 - 122. The 121.

BAILING OR PUMPING TEST
(specify one by circling)

(specify one by circling)

Test rate 12 gpm
Duration of test 1 hrs
7/19/1957

Drawdown 3 ft Date 11/21/11

Static level (depth to water) 40 ft

Quality (clear, cloudy, taste, odor) clear

Pump installed by

Locate in reference to numbered state highways, street intersections, county roads, etc.

To

8

80	89
89	101
101	116

Spring Rd.

[illegible]

A hand-drawn map on a grid background. A horizontal line is labeled "Well 5609 Wilcox" above it. A vertical line intersects this horizontal line, and is labeled "Twitter Rd." to its left. The cardinal directions are marked: "N" at the top, "S" at the bottom, "E" at the right, and "W" at the left.

May 12 - 1977

Joseph Ockler

• If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL

525892

(specify one by circling)

331

ORIGINAL
172 ✓

507633

Fountain Square

Columbus, Ohio 43224

COUNTY Franklin TOWNS Franklin
OWNER Jim Shaw

SECTION OF TOWNSHIP
ADDRESS 4418 Dupont Rd

LOCATION OF PROPERTY (Range 9A door) Hallsville, D

BAILING OR PUMPING TEST
(specify one by circling)

Casing diameter 4 1/4" Length of casing 61

Type of screen none Length of screen _____

Type of pump _____

Capacity of pump _____

Depth of pump setting — 30

Date of completion Mar 18/11

Pump installed by Justin by 2nd pump

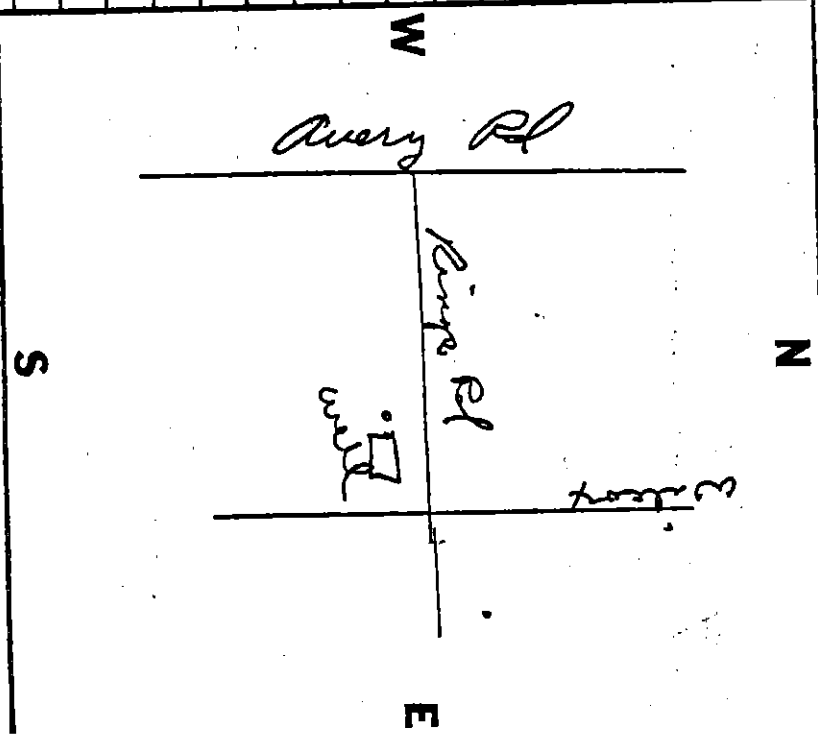
SKETCH SHOWING LOCATION

From

To

Locate in reference to numbered state highways, street intersections, county roads, etc.

Clay	on	50 ft
Sand & Gravel	50	61



DRILLING FIRM

Arthur C. Plummer - Son

DATE _____

Mar 18/77

ADDRESS 5871 Grand Ed Building, O. SIGNED Robert A. J. [Signature]

• If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

17m

NO CARBON PAPER
NECESSARY -
SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

649344

COUNTY Warrick TOWNSHIP Washington SECTION OF TOWNSHIP
OWNER 8 Hwy Broad Farm Address 2999 E Dublin Columbus
LOCATION OF PROPERTY 5695 Ridge Road

CONSTRUCTION DETAILS

Casing diameter <u>4 3/4"</u>	Length of casing <u>44'</u>	Test rate <u>8</u> gpm	Duration of test _____ hrs
Type of screen _____	Length of screen _____	Drawdown <u>none</u> ft	Date _____
Type of pump _____		Static level (depth to water) <u>30</u> ft	
Capacity of pump _____		Quality (clear, cloudy, taste, odor) _____	
Depth of pump setting _____		Pump installed by _____	
Date of completion _____			

(BAILING OR PUMPING TEST) (Specify one by circling)

WELL LOG*

SKETCH SHOWING LOCATION

Formations: sandstone, shale, limestone, gravel, clay	From	To	Sketch showing location
	0 ft	39 ft	
<u>clay</u>			
<u>sandy gravel</u>	<u>39</u>	<u>40</u>	
<u>clay</u>	<u>40</u>	<u>43</u>	
<u>sandy gravel</u>	<u>43</u>	<u>44</u>	

088 H
DRILLING FIRM Ray's Phosphate DATE Nov. 21 1985
ADDRESS Route 4 Dublin Ohio SIGNED Bill Phosphate

*If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224 333

WELL LOG AND DRILLING REPORT

State of Ohio

PLEASE USE PENCIL

DEPARTMENT OF NATURAL RESOURCES

OR TYPEWRITER

Division of Water

DO NOT USE INK

1562 W. First Avenue

Columbus 12, Ohio

NO 283901

ORIGINAL
248

County Franklin

Township Washington

Section of Township 1-C

Owner

William Smith

Address

Puttler, Ohio

Location of property

2nd of a mile East of Mt. Pleasant, Puttler, Ohio

CONSTRUCTION DETAILS

Casing diameter 4 1/2" D. Length of casing 53
Type of screen — Length of screen —
Type of pump Roller pump
Capacity of pump 10 G.P.M.
Depth of pump setting 42
Date of completion June 21, 1962

BAILING OR PUMPING TEST

Pumping Rate 20 G.P.M. Duration of test 2 hrs.
Drawdown 10 ft. Date 6/21/62
Static level-depth to water 9 ft.
Quality (clear, cloudy, taste, odor) Clear

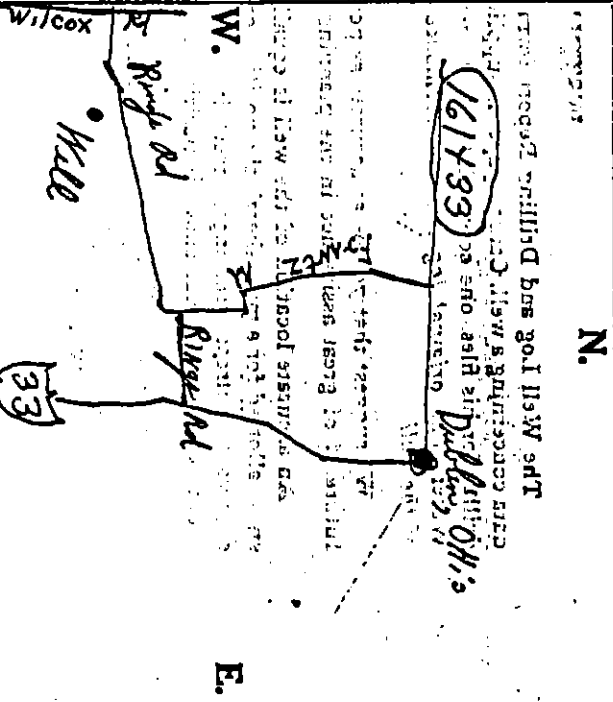
Pump installed by Chris Beckley, Jr.

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

WELL LOG

Formations, Sandstone, shale, limestone, gravel and clay	From	To
Clay	0 Feet	16 Ft.
Sandy Clay	16	28
Clay gravel	28	38
Sandy gravel	38	40
Clay	40	43
Sand	43	47
Limestone	47	90



See reverse side for instructions

Drilling Firm

DATE JUN 30 1962

Date June 22, 1962

Address

Marionville, Ohio

Signed

Chris Beckley, Jr.

ORIGINAL
17 JUL

Nº 354154

Division of Water

Columbus, Ohio 43212

Columbus, Ohio 43212

County 1010

Address North Lincoln Street

5530
Location of property 1st house west of bearing on north side riverbed,

Casing diameter	4 1/2"	Length of casing	42'
Type of screen		Length of screen	
Type of pump			
Capacity of pump			
Depth of pump setting			
Date of completion			

Pumping Rate	10	G.P.M.	Duration of test	hrs.
Drawdown	none	ft.	Date	23
Static level-depth to water		ft.		
Quality (clear, cloudy, taste, odor)	clear			
	Pump tested 6 hours			
Pump installed by				

Pumping Rate 12 G.P.M. Duration of test.....hrs.

Drawdown	ft.	Date
None		

Static level-depth to water 2.3 ft.

Quality (clear, cloudy, taste, odor)..... clear

Plants tested 6 hours

Pump installed by

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

N. 5534

٥٠

Drilling Firm Sam Plummer & Sons Date 22 Sept 66
Address Route 1 Dublin Ohio Signed Eddie Plummer

Route 1 Bucklin Ohio Signed Eddie Plummer

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

No. 164880

County Franklin Township Washington Section of Township 5285
Owner Louis E. Bourn Address 530 Hammond Avenue
Location of property 5285 Bridge Rd.

CONSTRUCTION DETAILS

Casing diameter 4 1/2" Length of casing 51'
Type of screen _____ Length of screen _____
Type of pump _____
Capacity of pump _____
Depth of pump setting _____

PUMPING TEST

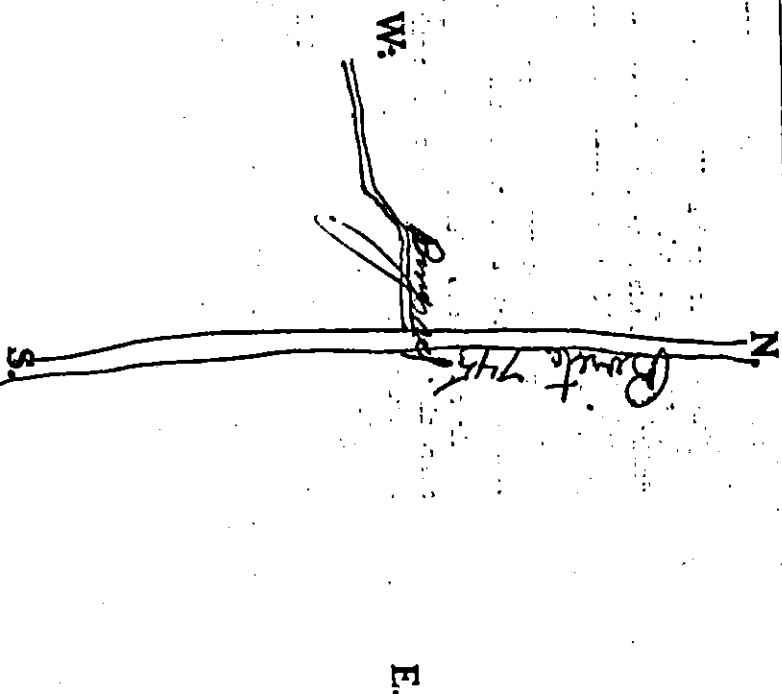
Pumping rate _____ G.P.M. Duration of test _____ hrs.
Drawdown 27' ft. Date _____
Developed capacity _____
Static level—depth to water 61 ft. static
Pump installed by _____

WELL LOG

Formations	From	To
Sandstone, shale, limestone, gravel and clay	0 Feet	10 Ft.
<u>clay</u>	10	26
<u>sand & mud</u>	25	50
<u>clay</u>	30	57
<u>limestone</u>		

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm Sam Plummer Date 26 June 56
Address Washington, Ohio Signed Allen Plummer

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

No 164882

County Franklin Township Washington Section of Township - 5275
Owner Ernest H. Bucklett Address 10920 Morgan Ave
Location of property 5275 Rings rd off 745 State route

CONSTRUCTION DETAILS

Casing diameter 1 1/4" Length of casing 42'
Type of screen..... Length of screen.....
Type of pump.....
Capacity of pump.....
Depth of pump setting.....

PUMPING TEST

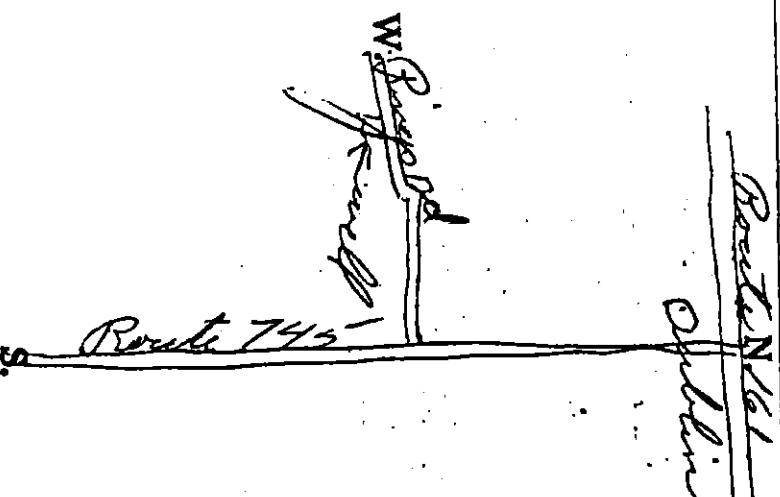
Pumping rate..... G.P.M. Duration of test..... hrs.
Drawdown 34' ft Date.....
Developed capacity.....
Static level—depth to water 6 ft.
Pump installed by.....

WELL LOG

Formations	From	To
Sandstone, shale, limestone, gravel and clay	0 Feet	12 Ft.
<u>clay</u>	<u>12</u>	<u>20</u>
<u>dirty sand</u>	<u>20</u>	<u>22</u>
<u>limestone</u>	<u>22</u>	<u>32</u>
<u>clay</u>	<u>32</u>	<u>41</u>
<u>sand limestone</u>	<u>41</u>	<u>53</u>
<u>limestone</u>		

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.



E.

73703714
3263 34. 0331

See reverse side for instructions

Drilling Firm Sam Plummer & Sons
Address Washington, Ohio

Date 14 July 56
Signed Ernest H. Plummer

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES

Division of Water
Columbus, Ohio

No 164917

County Franklin Township Washington Section of Township 5 235
Owner Anthony W. Adams Address 1321 Westwood Drive
Location of property 5235 Pump & Well Columbus

CONSTRUCTION DETAILS

Casing diameter 4 1/2" Length of casing 61' Pumping rate G.P.M. Duration of test hrs.
Type of screen Length of screen Drawdown ft. Date 10/1/52
Type of pump Developed capacity
Capacity of pump Static level—depth to water 45 ft
Depth of pump setting Pump installed by

WELL LOG

Formations
Sandstone, shale, limestone,
gravel and clay

0 Feet

26' 26'

N.

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

broken stone 26' 26' 26'
clay 41' 41' 41'
solid stone 60' 70' 70'
2251 W. 3330 2251 W. 3330 2251 W. 3330
See reverse side for instructions S.
338

Drilling Firm Sandy Plummer & Son Date June 27th 1952Address West 1st St. & 2ndSigned Sandy Plummer

ORIGINAL

228 ✓

State of Ohio

DEPARTMENT OF NATURAL RESOURCES

Division of Water

1562 W. First Avenue

Columbus, Ohio 43212

Columbus, Ohio 43212

Section of Township

Ships
George H. D.

12-10-1964 Section of Township
11-1-1964 Address
11-1-1964 Rd
11-1-1964 Rd

BAILING OR PUMPING TEST

Pumping Rate 8 G.P.M. Duration of test 7 hrs.

Drawdown 8 ft. Date 9-2

Static level-depth to water 20 ft.

Quality (clear, cloudy, taste, odor).....

Pump installed by

1

SKETCH SHOWING LOCATION

State Highways, St. Intersections, County roads, etc.

A hand-drawn map showing a property layout. A horizontal line is labeled 'Duffin Rd' in cursive. A vertical line intersects it, labeled 'Duffin' in cursive. To the right of the intersection, there is a rectangular area labeled 'Rugby Rd' in cursive. The map is oriented with 'N.' at the top, 'E.' at the bottom, 'W.' on the left, and 'S.' on the right. A small square is labeled 'Well' in cursive.

See reverse side for instructions

Date _____

Dec 8, 1961

2187

Frank Chambers

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

ORIGINAL

230

NO CARBON PAPER
NECESSARY—

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water

No. 383321

SELF-TRANSCRIBING

65 S. Front St., Rm. 815
Columbus, Ohio 43215

County Franklin Township Washington Section of Township

Owner Martin & Matthews Address 88 S. Long St. Ohio

Location of property on Ring rd at 270

CONSTRUCTION DETAILS

Casing diameter 4 1/2" Length of casing 29'
Type of screen _____ Length of screen _____
Type of pump _____
Capacity of pump _____
Depth of pump setting _____
Date of completion _____

BAILING OR PUMPING TEST (Specify one by circle)

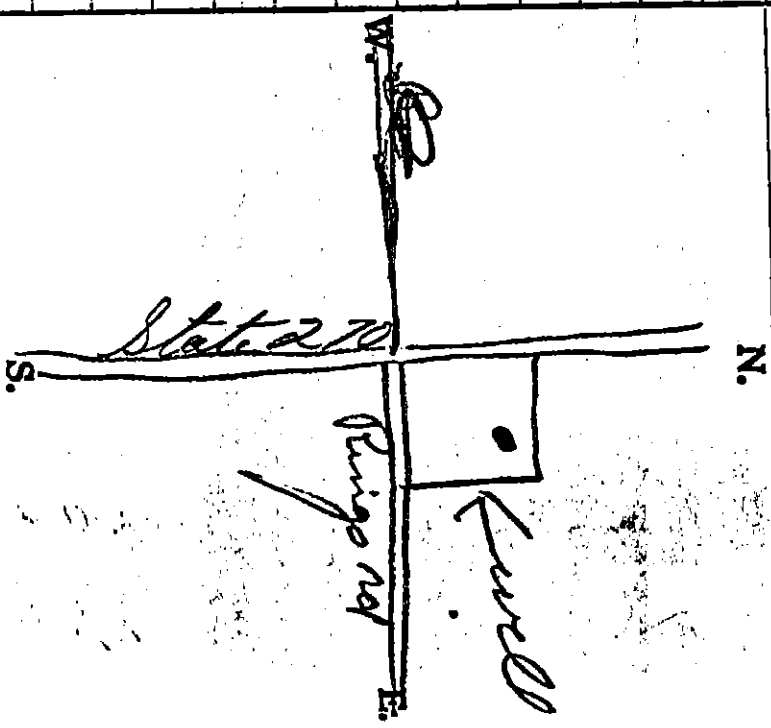
Test Rate _____ G.P.M. Duration of test _____ hrs.
Drawdown water ft. Date _____
Static level-depth to water 17 ft.
Quality (clear, cloudy, taste, odor) Built in steel 18 gal drum
Pump installed by _____

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
<u>Clay</u>	<u>0 Feet</u>	<u>9 Ft.</u>
<u>Clay</u>	<u>9</u>	<u>21</u>
<u>Clay</u>	<u>21</u>	<u>24</u>
<u>sandy gravel</u>	<u>24</u>	<u>29</u>

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.



Drilling Firm Barnes Pumping & Drilling Co. Date 29 Oct 69

Address Culic, Ohio Signed Robert O. Summers

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

ORIGINAL
229

NO CARBON PAPER
NECESSARY--

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water

452952

SELF-TRANSCRIBING

65 S. Front St., Rm. 815
Columbus, Ohio 43215

County Franklin Township Washington Section of Township 90 Acme Development Co.,
Owner Western Electric Co. Address 87 W. Broad St., Columbus, Ohio
Location of property 900 Ft. North of Intersection of Kings Rd. & Blazer
Parkway

CONSTRUCTION DETAILS

Casing diameter 12" Length of casing 37'
Type of screen None Length of screen
Type of pump None
Capacity of pump
Depth of pump setting
Date of completion

BAILING OR PUMPING TEST (Specify one by circling)

Test Rate 400 G.P.M. Duration of test 10 hrs.
Drawdown 75'-10" ft. Date 3-22-73
Static level-depth to water 6 ft.
Quality (clear, cloudy, taste, odor) Clear

Pump installed by None

WELL LOG*

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

N.

Formations Sandstone, shale, limestone, gravel and clay	From	To
<u>Yellow clay & stones</u>	<u>0 Feet</u>	<u>17 Ft.</u>
<u>Grey clay & gravel</u>	<u>17</u>	<u>56</u>
<u>Grey limestone</u>	<u>56</u>	<u>70</u>
<u>Gravel w/ gravel</u>	<u>70</u>	<u>71</u>
<u>Grey limestone</u>	<u>71</u>	<u>83</u>
<u>Brown limestone</u>	<u>83</u>	<u>160</u>
<u>Brown limestone</u>	<u>160</u>	<u>175</u>
<u>Grey limestone</u>	<u>175</u>	<u>200</u>

W.

E.

S.

Drilling Firm G.M. BAKER & SON, INC.
145 HOSACK STREET
COLUMBUS, OHIO 43207

Date 5-15-73
Signed W.H. Borge

*If additional space is needed to complete well log, use next consecutive numbered form.

State of Ohio

436531

Division of Water

Phone (614) 469-2646

Columbus, Ohio 43215

FRANKLIN Township WASHINGTON Section of Township

TON Section of Township

Address Dublin 0

BAILING OR PUMPING TEST
(Specify one by circling)

Test Rate 40 G.P.M. Duration of test 55 hrs

Drawdown 3 ft. Date MAY 28 - 11

Static level-depth to water 42 ft.

Quality (clear, cloudy, taste, odor)-----

Pump installed by _____

Pump installed by _____

SKETCH SHOWING LOCATION

동

九 丑

172

ST RT 257
DUBLIN RD

FRANK

IV.

Fixes Rd

71

6 1/2" hole - 90°
5" 90° - 172

3.

Date JUNE 4 - 1977

Signed Edward D. Holt.

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

State of Ohio

NO CARBON PAPER
NECESSARY -

DEPARTMENT OF NATURAL RESOURCES

Division of Water

SELF-TRANSCRIBING

Fountain Square

Columbus, Ohio 43224

626527

COUNTY Franklin

TOWNSHIP Washington

SECTION OF TOWNSHIP

OWNER Online Computer Library Center ADDRESS 6565 Front Road A-2

LOCATION OF PROPERTY SAHE

CONSTRUCTION DETAILS

Casing diameter 6" Length of casing 51H

Type of screen _____ Length of screen _____

Type of pump _____

Capacity of pump _____

Depth of pump setting _____

Date of completion _____

BAILING OR PUMPING TEST

(specify one by circling)

Test rate 55 gpm Duration of test 1 hrs

Drawdown _____ ft Date May 1, 1985

Static level (depth to water) 35 ft

Quality (clear, cloudy, taste, odor) _____

Pump installed by _____

WELL LOG*

Formations: sandstone, shale,
limestone, gravel, clay

From

To

0 ft

3 ft

Gravel

3

15

Gravel

15

43

Gravel

43

47

Gravel

47

51

Gravel

51

51

Gravel

51

150

Gravel

150

150

Gravel

150

150

Gravel

150

150

Gravel

150

150

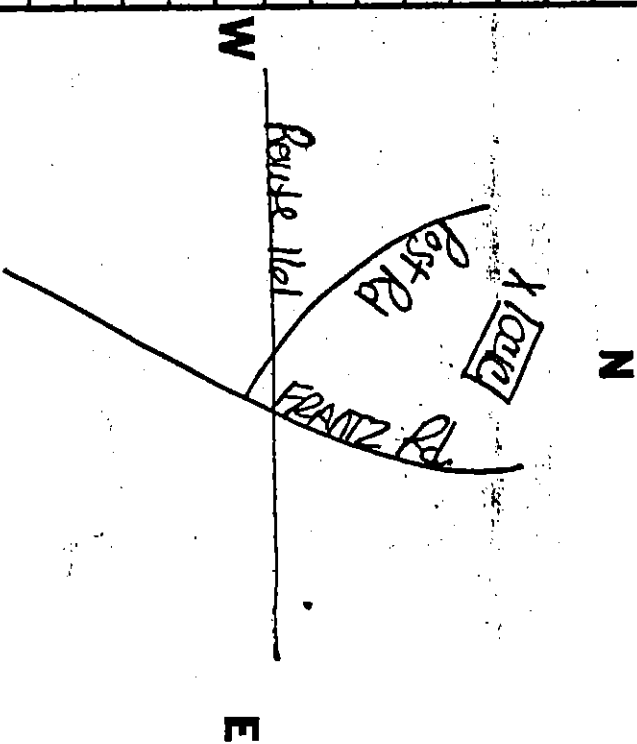
Gravel

150

150

Locate in reference to numbered
state highways, street intersections, county roads, etc.

SKETCH SHOWING LOCATION



DRILLING FIRM

DATE

ADDRESS

SIGNED

*If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224 358

✓✓✓

N: 358205

N: 358205

1562 W. First Avenue

Copy,

Columbus, Ohio 43212

tion of Township
1145-*Princeton Rd*

Columella Ohio

West. & Darling Office

BAILING OR PUMPING TEST

Pumping Rate $4\frac{1}{2}$ G.P.M. Duration of test $2\frac{1}{2}$ hrs.

Drawdown None it. Date _____

[illegible]

Quantity (over)

Noted. By Bailey

1. A. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840.

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

2

10

24. 5

with *well* *well*

Ref

10

10

1

10

See reverse side for instructions

Date Feb. 10/67

Signed Harold F. Sherman

On log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

State of Ohio

NO 351636

PLEASE USE PENCIL,
OR TYPEWRITER

DEPARTMENT OF NATURAL RESOURCES

Division of Water

1562 W. First Avenue
Columbus, Ohio 43212

ORIGINAL
WLC

DO NOT USE INK

County Franklin Township Washington Section of Township
Owner Midwestern Volks Magazine Franklin Ohio
Location of property Immediately North-West of Dublin High School

CONSTRUCTION DETAILS

Casing diameter 1 3/8" Length of casing 41'
Type of screen 10/16" Length of screen
Type of pump Peristaltic
Capacity of pump 400 G.P.M.
Depth of pump setting 130'
Date of completion Sept. 1968

BAILING OR PUMPING TEST

Pumping Rate 350 G.P.M. Duration of test 10 hrs.
Drawdown 113 ft. Date 9/5/68
Static level-depth to water 49 ft.
Quality (clear, cloudy, taste, odor) clear
Pump installed by _____

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
clay	0 Feet	2' Ft.
clay & boulders	2'	8'
limestone	8'	183'
laminated lime & shale	183'	210'
limestone	210'	225'

N.

W.

E.

S.

See reverse side for instructions

Drilling Firm A.M. Parker Inc. Date 11/21/68
Address Columbus Ohio Signed A.M. Parker

*If additional space is needed to complete well log, use next consecutive numbered form.

No. 409624

7

Dredging

Pauline D.

H-3.3 M.E. Gorman Body Shop

BAILING OR PUMPING TEST
(Specify one by circling)

Test Rate. 36 G.P.M. Duration of test 2 hrs.

Drawdown 13 ft. Date 5/20

Static level-depth to water 50 ft.

Quality (clear, cloudy, taste, odor) _____

Tested by Laiding

Pump installed by _____

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

N.

5
Frantz Pol

Body Shop

well

Date July 14/78

Signed Arthur E. Hammer

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

RT 1

PLEASE USE PENCIL
OR TYPEWRITER
DO NOT USE INK.

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1562 W. First Avenue
Columbus 12, Ohio

NO 283903

County Franklin Township Washington Section of Township North-East
Owner Richard Tolson Address Dublin Ohio
Location of property Ballin - Alvin With an corner of Rte 161 North of Dublin, Ohio

CONSTRUCTION DETAILS

Casing diameter 4 1/2 Length of casing 88
Type of screen — Length of screen —
Type of pump —
Capacity of pump —
Depth of pump setting —
Date of completion —

BAILING OR PUMPING TEST

Pumping Rate 18 G.P.M. Duration of test 1 hrs.
Drawdown 2.8 ft. Date July 1962
Static level-depth to water 30.7 ft.
Quality (clear, cloudy, taste, odor) Cloudy
Pump installed by —

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

Formations	From	To	Sketch
Sandstone, shale, limestone, gravel and clay	0 Feet	8 Ft.	
Clay line 18 ft. below limestone 5 ft. below limestone 10 ft. below limestone 10 ft. below	85	93	

See reverse side for instructions

Drilling Firm

Date July 12, 1962

Address

Signed

Marysville, Ohio Rt 1

Clair Boudry Jr.

State of Ohio

No. 383019

Columbus, Ohio 43215

337 Firearm Rd.

Dr. D.

Edw Dickinson

BAILING OR PUMPING TEST
(Specify one by circling)

Test Rate 20 G.P.M. Duration of test 22.25 hrs.

Drawdown	Ward	ft.	Date	8-2-20
				32

Static level-depth to water 32 ft.

Quality (clear, cloudy, taste, odor)-----

Pump installed by Tested by Beckling

Pump installed by Robert J. McNamee

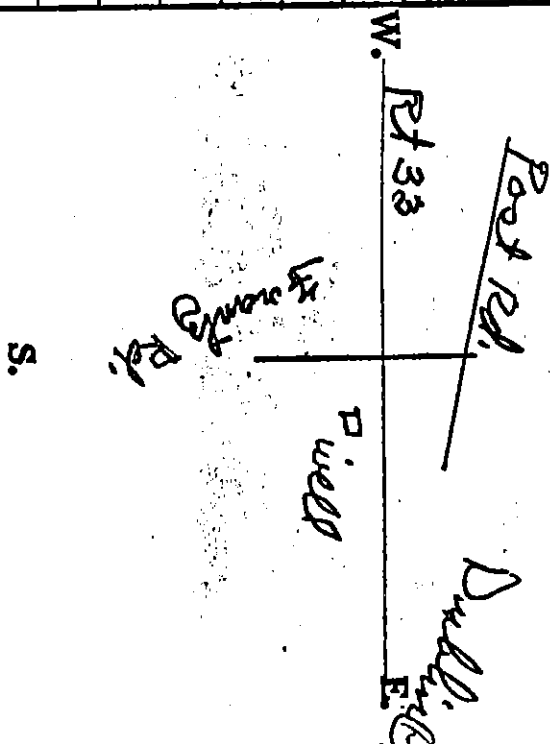
SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

1

17 It

129



Dec 26/68

Arthur S. Summers

*If additional space is needed to complete well log, use next consecutive numbered form.

-98-

Nº 366432

Nº 366432

Nº 366432

DO NOT USE INK.

County Frank

Owner Walter

Location of property.

BAILING OR PUMPING TEST

Pumping Rate.....15 G.P.M. Duration of test.....hrs.
5:10 + 27/67

Drawdown 16 ft. Date 2/24/61
78 ft.

Static level-depth to water 28 ft. *Clear*

Quality (clear, cloudy, taste, odor) Clear

7th Dec 1941

Pump installed by *Tested by Pumping*

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

N.

W.

Rt 33

6/25

Primary Rd

7/19

RT 745

Dublin, O.

E.

S.

See reverse side for instructions

See reverse side for instructions

Drilling Firm Calmar Corp. Date 1/25/78

8/27/67

Address 5871 Grand St. Dublin, O. Signed Arthur J. Flannery

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

86, 1

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

NO 166972

County Franklin Township Washington Section of Township
Owner Mr. G. R. Middle Address Butler, OHIO
Location of property 7th of a mile South of Route 33

CONSTRUCTION DETAILS

Casing diameter 4 1/2 Length of casing 125
Type of screen — Length of screen —
Type of pump Myers
Capacity of pump 10 G.P.M.
Depth of pump setting 21 ft

PUMPING TEST

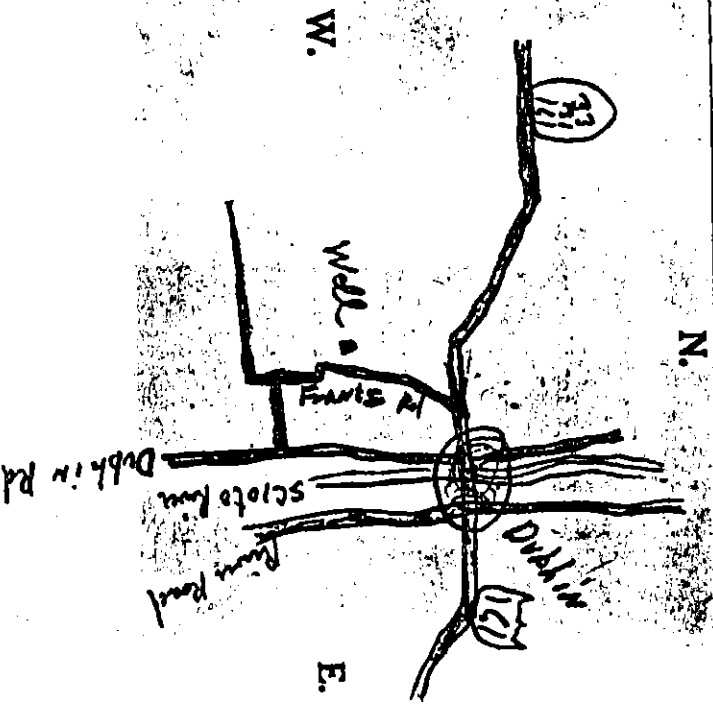
Pumping rate 10 G.P.M. Duration of test 1 hrs.
Drawdown 10 ft. Date June 29, 1954
Developed capacity 10 G.P.M.
Static level—depth to water 8 ft.
Pump installed by Brooklyn

WELL LOG

SKETCH SHOWING LOCATION

Formations Sandstone, shale, limestone, gravel and clay	From	To
<u>Clay & Boulders</u>	<u>0</u> Feet	<u>9</u> Ft.
<u>limestone</u>	<u>9</u>	<u>108</u>

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm 3205 Mt. Zion
Address Midland Center, Ohio 43141

Date July 2, 1955
Signed Charles B. Broun, Jr.

365

0

•

1302 W. FIRST AVENUE
Columbus, Ohio 43212

Section of Township UNK

RV#401, Pullin, Viro

Dublin, Ohio

BAILING OR PUMPING TEST

Pumping Rate.....	15	G.P.M.	Duration of test.....	2	hrs.
-------------------	----	--------	-----------------------	---	------

Drawdown 15 ft. Date 4-21-65 28

1

Quality (clear, cloudy, taste, odor)	clear

Pump installed by _____

SKETCH SHOWING LOCATION

roads, etc.

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

N.

St Rt 33

W. 10th St ← 1/2 mile →

well

S.

See reverse side for instructions

See reverse side for instructions

Date April 4, 1965
Signed W.W. Whitson

•

WELL LOG AND DRILLING REPORT

Part of 1
pump #15.1
DCV
ORIGINAL

PLEASE USE PENCIL
OR TYPEWRITER
DO NOT USE INK.

DEPARTMENT OF NATURAL RESOURCES

State of Ohio

Division of Water

1562 W. First Avenue

Columbus 12, Ohio

NO 321106

County Franklin Township Washington Section of Township
Owner Howard Coates Address Casherton, Ohio
Location of property On State #161 - Across from Dublin High

CONSTRUCTION DETAILS

Casing diameter 4" Length of casing 91'
Type of screen Length of screen
Type of pump
Capacity of pump
Depth of pump setting
Date of completion Nov. 6, 1964

BAILING OR PUMPING TEST

Pumping Rate 12 G.P.M. Duration of test 5 hrs.
Drawdown No ft. Date Nov. 6, 1964
Static level-depth to water 75 ft.
Quality (clear, cloudy, taste, odor) clear - good taste
Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay

Clay

0 Feet

3' Ft
PAVING

Limestone from 5th yd to 3' 00" of 67/5' -
Limestone 5' 00" to 10' 00" -
to 10' 00" of 67/5' -
to 10' 00" of 67/5' -

WATER
AT 113'
AND 114' 00" -

SKETCH SHOWING LOCATION

Locate, in reference to numbered
State Highways, St. Intersections, County roads, etc.

N.

DUBLIN

DUBLIN

#161

Montgomery R.

S.

See reverse side for instructions

Drilling Firm PLUMMER & McDANNAID
Water Well Drilling
Address 199 HARRISON STREET
GALENA, OHIO

Date Nov. 16, 1964
Signed Plummer & McDannaid

WELL LOG AND DRILLING REPORT
DEPARTMENT OF NATURAL RESOURCES

State of Ohio
Division of Water
1500 Dublin Road
Columbus, Ohio

No. 188698

County Franklin Township Washington Section of Township

Owner R P Collins

Address

Location of property across from Dublin High School

CONSTRUCTION DETAILS

Casing diameter 4 1/4" Length of casing 42'
Type of screen none Length of screen
Type of pump
Capacity of pump
Depth of pump setting 90 ft
Date of completion

BAILING OR PUMPING TEST

Pumping rate G.P.M. Duration of test hrs.
Drawdown none Date June 6/57
Developed capacity
Static level—depth to water
Pump installed by Tested by
Bailing

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay

From 0 Feet To 4 Ft.

Clay

4

RT

33

well

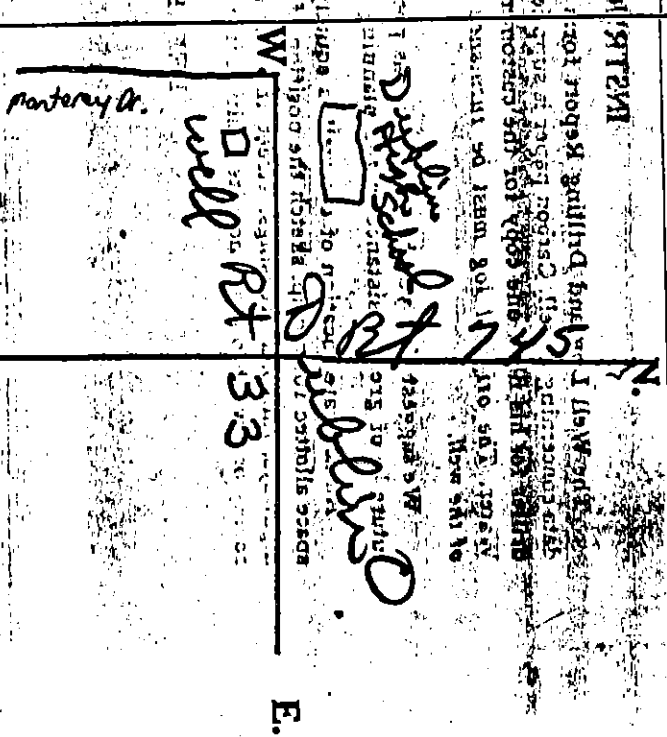
RT

33

well

Sketch in reference to numbered State Highways, St. Intersections, County roads, etc.

SKETCH SHOWING LOCATION



03W13039

S.

See reverse side for instructions

Drilling Firm DeWitt Bros

Date June 6/57
Signed DeWitt Bros

I 386

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

NO 142742

County Franklin Township Washington Section of Township 13 Range 13 Road 13

Owner Jack & Mary Ann Address 7570

Location of property 49 MacArthur Drive West of Dublin Rd., 300 South of N. & Franklin #313

CONSTRUCTION DETAILS

Casing diameter 6" Length of casing 8'
Type of screen More length of screen
Type of pump _____
Capacity of pump _____
Depth of pump setting _____
Pumping rate 15 G.P.M. Duration of test 1 hrs.
Drawdown 35 ft. Date Oct 22
Developed capacity 700 G.P.M.
Static level—depth to water 75 ft.
Pump installed by _____
PUMPING TEST

WELL LOG

Formations as run by Electrician
Sandstone, shale, limestone,
gravel and clay

0 Feet

5 Feet

N. & Franklin #33

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

Clay
limestone
gravel and clay
at 90 ft.

Formations as run by Electrician
Sandstone, shale, limestone,
gravel and clay

Formations as run by Electrician
Sandstone, shale, limestone,
gravel and clay

Formations as run by Electrician
Sandstone, shale, limestone,
gravel and clay

See reverse side for instructions

Drilling Firm M. J. Carter

Date October 24, 1955

Address 419 S. 1st St.

Signed M. J. Carter

Columbus Ohio

I-387

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

NO 142739

15d ✓

County Franklin Township Washington Section of Township 15 of Lot Number 33
Owner Franklin & Merrill Address 7570 Olive Drive, Dublin, Ohio
Location of property 48 Maple Drive 13 1/2 West of
Highway 300 at intersection of 41st Avenue #33

CONSTRUCTION DETAILS

Casing diameter 5 1/8" Length of casing 12 ft.
Type of screen None Length of screen _____
Type of pump _____
Capacity of pump _____
Depth of pump setting 13 ft.

PUMPING TEST RESULTS

Pumping rate 15 G.P.M. Duration of test 1 1/2 hrs.
Drawdown 15 ft. Date Sept 24
Developed capacity 200 G.P.M.
Static level—depth to water 80 ft.
Pump installed by _____

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay
0 Feet 7 ft. 12 ft. 13 ft.

SKETCH SHOWING LOCATION

Locate by reference to numbered State Highways, St. Intersections, County roads, etc.

Clay
limestone
gravel and clay
at 85 ft
increased
deeper

223130 3335
See reverse side for instructions

Drilling Firm M. J. Carter Date Sept 26, 1955
Address 419 Boulevard Ave. Signed M. J. Carter
Columbus Ohio 1388

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

NO 142740

County Franklin Township Franklin Section of Township 17570 Lot Number 33

Owner James D. Maclellan Address 7570 Dublin Road

Location of property 60 Maclellan Drive 1/3 mi West of Dublin Rd, 350 ft South of N. 28th St #33

CONSTRUCTION DETAILS

Casing diameter 5 1/8" Length of casing 10'
Type of screen None Length of screen _____
Type of pump _____
Capacity of pump _____
Depth of pump setting _____
Pumping rate 15 G.P.M. Duration of test 1 hrs.
Drawdown None Date Oct 11
Developed capacity 900 G.P.M.
Static level—depth to water 60 ft.
Pump installed by _____

PUMPING TESTS

SKETCH SHOWING LOCATION

Locate, in reference to numbered State Highways, St. Intersections, County roads, etc.

WELL LOG

Formations and depth of casing
Sandstone, shale, limestone, gravel and clay

0 Feet

1 ft

2 ft

3 ft

4 ft

5 ft

6 ft

7 ft

8 ft

9 ft

10 ft

11 ft

12 ft

13 ft

14 ft

15 ft

16 ft

17 ft

18 ft

19 ft

20 ft

21 ft

22 ft

23 ft

24 ft

25 ft

26 ft

27 ft

28 ft

29 ft

30 ft

31 ft

32 ft

33 ft

34 ft

35 ft

36 ft

37 ft

38 ft

39 ft

40 ft

41 ft

42 ft

43 ft

44 ft

45 ft

46 ft

47 ft

48 ft

49 ft

50 ft

51 ft

52 ft

53 ft

54 ft

55 ft

56 ft

57 ft

58 ft

59 ft

60 ft

61 ft

Clay
Shale
Limestone
Gravel and clay
First water level
95 ft
Depth of water level
350 ft

See reverse side for instructions

Drilling Firm M. J. Roeder

Address 419 State Street

Columbus Ohio

Date

Oct 12, 1955

Signed M. J. Roeder

I-389

WELL LOG AND DRILLING REPORT

ORIGINAL

PLEASE USE PENCIL
OR TYPEWRITER
DO NOT USE INK.

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water

No. 280324

1562 W. First Avenue
Columbus 12, Ohio

County Champaign Township Madison Section of Township
Owner John Adams Address 1732 East Columbus St. Ohio
Location of property 70 minutes

CONSTRUCTION DETAILS

Casing diameter 4 1/2" Length of casing 131'
Type of screen _____ Length of screen _____
Type of pump _____
Capacity of pump _____
Depth of pump setting _____
Date of completion _____

BAILING OR PUMPING TEST

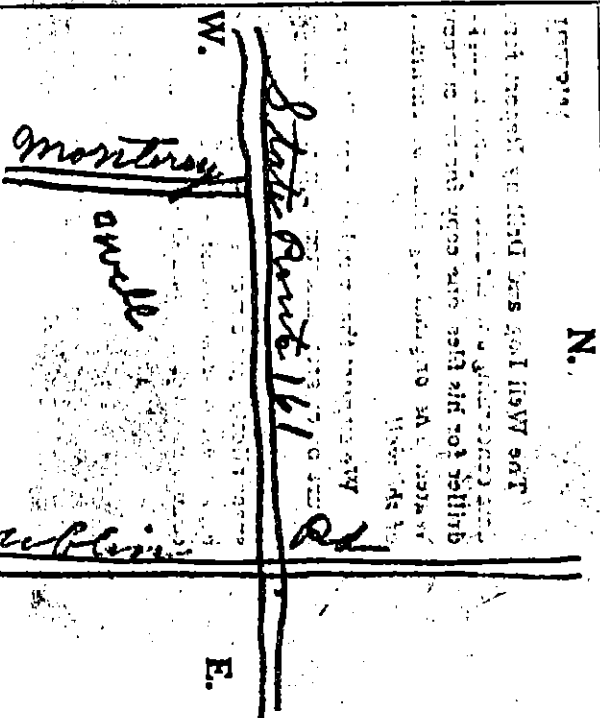
Pumping Rate 12 G.P.M. Duration of test _____ hrs.
Drawdown 20 ft. Date _____
Static level-depth to water 90 ft.
Quality (clear, cloudy, taste, odor) _____
Pump installed by _____

WELL LOG

SKETCH SHOWING LOCATION

Formations Sandstone, shale, limestone, gravel and clay
From 0 Feet To 3 Ft.
Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

Drinking water
solid limestone
130
150



See reverse side for instructions

Drilling Firm Sam Plummer & Son Date Dec 18 1962
Address Route 1 Dublin Ohio Signed Bill Plummer

WELL LOG AND DRILLING REPORT

NO CARBON PAPER
NECESSARY—State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water

No. 376225

SELF-TRANSCRIBING

65 S. Front St., Rm. 815
Columbus, Ohio 43215County FranklinTownship Washington Section of Township _____Owner Marvin WrightAddress Dublin, OhioLocation of property In Dublin, Ohio - @ 200 Marion Ave.

CONSTRUCTION DETAILS

Casing diameter 4" Length of casing 91'-6"
 Type of screen — Length of screen —
 Type of pump —
 Capacity of pump —
 Depth of pump setting —
 Date of completion —

BAILING OR PUMPING TEST
(Specify one by drilling)

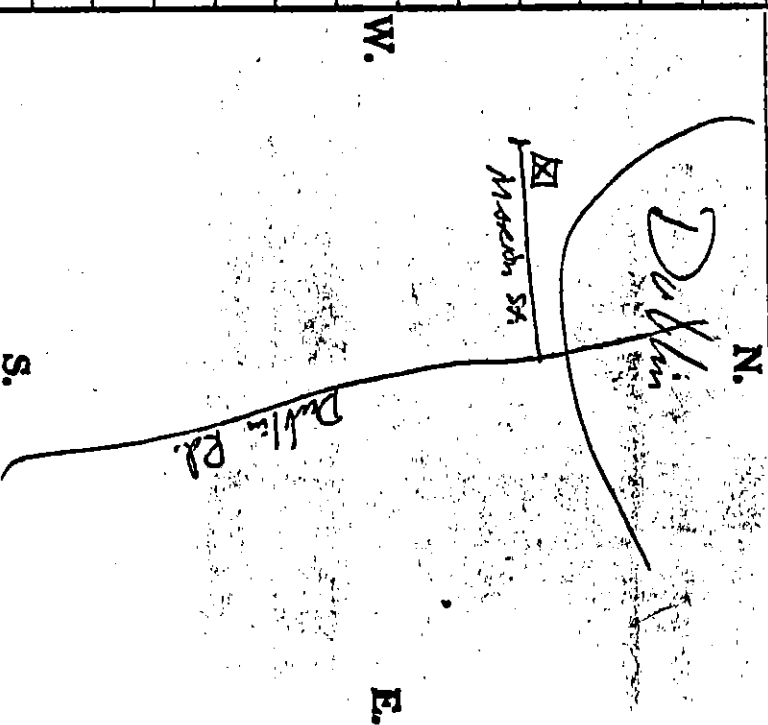
Test Rate 16 G.P.M. Duration of test 1 1/2 hrs.
 Drawdown 42 ft. Date 10-2-68
 Static level-depth to water 53' ft.
 Quality (clear, cloudy, taste, odor)
clear - good taste & odor
 Pump installed by —

WELL LOG*

Formations Sandstone, shale, limestone, gravel and clay	From	To
<u>Clay</u>	<u>0 Feet</u>	<u>5 Ft.</u>
<u>Limestone</u>	<u>5'</u>	<u>30'</u>
<u>Clay</u>	<u>30'</u>	<u>31'</u>
<u>Limestone</u>	<u>31'</u>	<u>145'</u>
<u>WATER AT</u> <u>145'</u>		
<u>Reels cased</u> <u>to 91'-6"</u>		

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

Drilling Firm PLUMMER & McDANNALD
Water Well DrillingAddress 199 HARRISON STREET
GALENA, OHIODate 10-2-68Signed Edmund McDannald

*If additional space is needed to complete well log, use next consecutive numbered form.

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

No 142735

10

County Franklin Township Wellington Section of Township 18 Number 18

Owner Jacob H. & Mervin S. Dinkel Address 7570 Dinkel Road

Location of property 79 Meadows St. Wellington, Ohio 43084
South of N. G. Route # 33, 400 ft. W. of Dinkel Rd

CONSTRUCTION DETAILS

Casing diameter 5 1/2" Length of casing 13'
Type of screen Well Length of screen
Type of pump
Capacity of pump
Depth of pump setting 100 ft.
Pumping rate 15 G.P.M. Duration of test 1 1/2 hrs.
Drawdown None Date Aug 4
Developed capacity 300 G.P.M.
Static level—depth to water 63 ft.
Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay
0 Feet
11 ft.
20 ft.
21 ft.
22 ft.
23 ft.
24 ft.
25 ft.
26 ft.
27 ft.
28 ft.
29 ft.
30 ft.
31 ft.
32 ft.
33 ft.
34 ft.
35 ft.
36 ft.
37 ft.
38 ft.
39 ft.
40 ft.
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SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

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See reverse side for instructions

Drilling Firm M. S. Dinkel

Date Aug 5 1955

Address 719 E. 1st St. Columbus, Ohio

F-56

0483

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

NO 142732

Trumbull Township
Owner Frank & Mercedes
Location of property 50' between 87' Well & Ohio 1/2 mi South of N. & State #33 400 ft West of Dublin Rd.
Section of Township
Address 7570 Dublin Road
CONSTRUCTION DETAILS
PUMPING TESTS

Casing diameter 5" Length of casing 36'
Type of screen None Length of screen
Type of pump
Capacity of pump
Depth of pump setting
Pumping rate 15 G.P.M. Duration of test 1 1/2 hrs.
Drawdown None Date July 21
Developed capacity 700 G.P.M.
Static level—depth to water 50 ft.
Pump installed by

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

WELL LOG
Formations, from top to bottom
Sandstone, shale, limestone, gravel and clay

0 Feet

Clay

14 Ft

N. & State #33

Clay

1/4

N. & State #33

Well

25

N. & State #33

Well

25

N. & State #33

Well

25

N. & State #33

Well

25

N. & State #33

Well

25

N. & State #33

700 G.P.M.

See reverse side for instructions

Drilling Firm M. & B. DrillingDate July 23, 1955Address 419 West 1st Ave.Signed W. J. Sanders

Columbus, Ohio

JH24

WELL LOG AND DRILLING REPORT

82

PLEASE USE PENCIL OR TYPEWRITER
 DEPARTMENT OF NATURAL RESOURCES
 Division of Water
 1562 W. First Avenue
 Columbus, Ohio 43212
 No 338743

County Franklin Township Washington Section of Township Pauline Corp.
 Owner William Ratty Co. Address Pauline Ohio
 Location of property 181. Marion St. - Pauline Ohio

CONSTRUCTION DETAILS

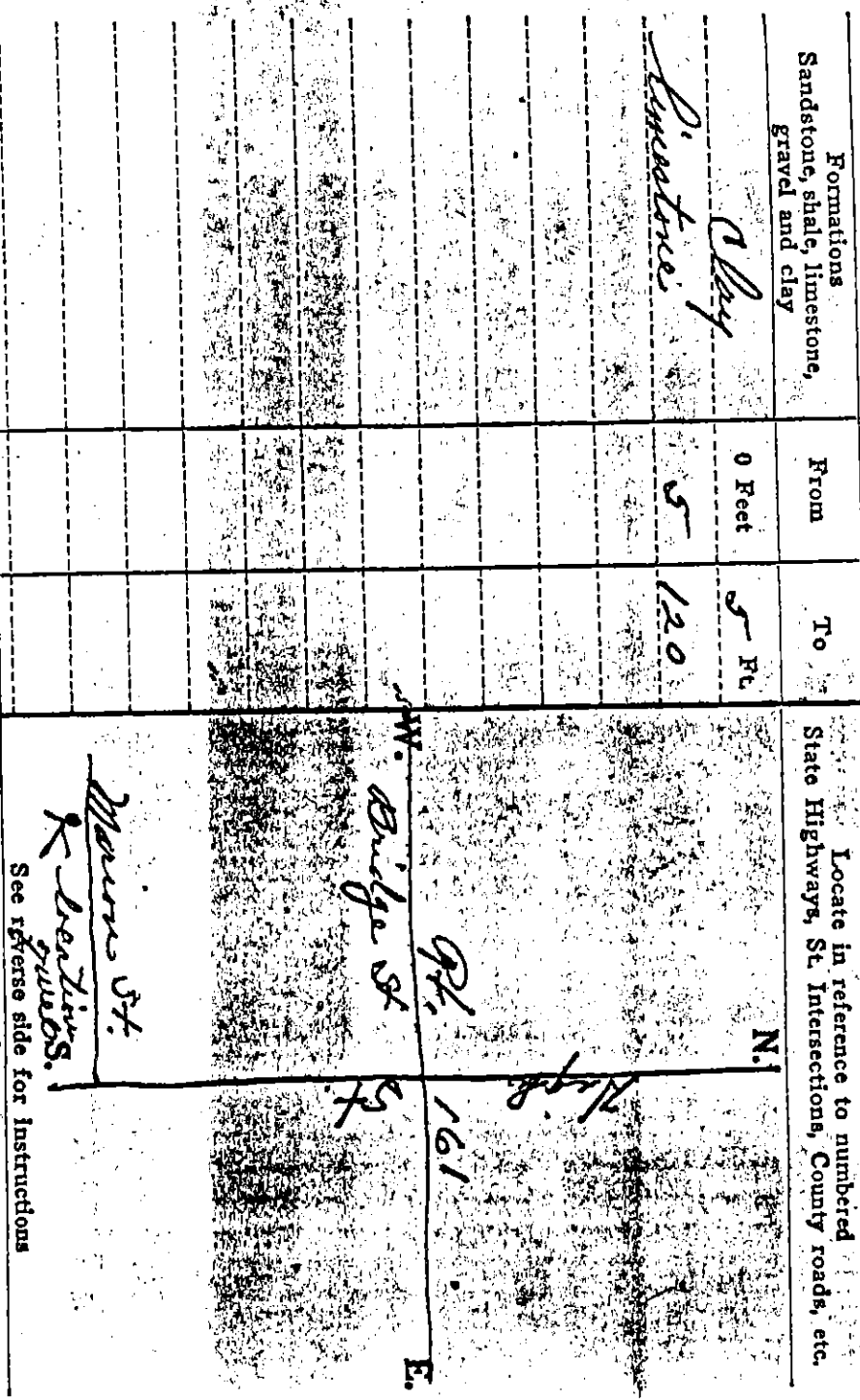
Casing diameter 4 1/4" Length of casing 90'
 Type of screen None Length of screen _____
 Type of pump _____
 Capacity of pump _____
 Depth of pump setting Set Pump at 90'
 Date of completion _____

BAILING OR PUMPING TEST

Pumping Rate 15 G.P.M. Duration of test 2 hrs.
 Drawdown None ft. Date _____
 Static level-depth to water 56 ft.
 Quality (clear, cloudy, taste, odor) _____
 Pump installed by _____

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm Blumen Bros Date April 1/46
 Address 537 N. Riverside St. Signed Harold T. Blumen
Pauline Ohio

*If additional space is needed to complete well log, use next consecutive numbered form.

34495

PLEASE USE PENCIL
OR TYPEWRITER
DO NOT USE INK

DEPARTMENT OF NATURAL RESOURCES

State of Ohio
Division of Water
1562 W. First Avenue
Columbus, Ohio

No. 257087

County Franklin Township Union Section of Township Dublin
Owner Byrd Bros Inc Address 3390 Martin Rd
Location of property 155 major St Dublin, O

CONSTRUCTION DETAILS (with notes to)

Casing diameter 4 1/4" Length of casing 90'
Type of screen new Length of screen
Type of pump
Capacity of pump
Depth of pump setting Sept pump at 1000 ft.
Date of completion

SKETCH SHOWING LOCATION

Formations
Sandstone, shale, limestone,
gravel and clay

From 0 feet to 90 feet

Locate in reference to numbered
State Highways, St Intersections, County roads, etc.

<u>Clay</u>	<u>0</u> feet to <u>6</u> feet	<u>139</u>
<u>Limestone</u>	<u>6</u> feet to <u>90</u> feet	<u>139</u>

03W1303R

See reverse side for instructions

Drilling firm Wm. J. Summers Bros Date May 20/61
Address Dublin, O Signed Arthur S. Summers

7426

County Franklin Township Washington Section of Township
Owner John O'Brien Address 387 S High Dublin, O
Location of property 65 meters S Dublin, O

CONSTRUCTION DETAILS

Casing diameter 4 1/2" Length of casing 23'
Type of screen Wire Length of screen 23'
Type of pump
Capacity of pump
Depth of pump setting 26'

PUMPING TEST

Pumping rate G.P.M. Duration of test hrs.
Drawdown ft. Date July 5/54
Developed capacity
Static level—depth to water ft.
Pump installed by Tested by Bailey

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay
Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

Formations	From	To	Remarks
Clay	0 Feet	12 Ft.	
limonite	12 Ft.	26 Ft.	
Sketch showing location			
See reverse side for instructions			

Drilling Firm William Bros Date July 6/54
Address Dublin, O Signed Arthur E. Plummer

27

N: 98985

Section of Township 55
or Lot Number.....

PUMPING TEST

SKETCH SHOWING LOCATION

Locate in reference to numbered highways; See Intersections, County roads, etc.

५

Date 1-5-20

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCESDivision of Water
1500 Dublin Road
Columbus, Ohio

No. 194871

County Franklin Township Washington Section of Township 126Owner Canall Thigmon Address 3890 Dunbury RoadLocation of property 126 Longview Dr.

CONSTRUCTION DETAILS

Casing diameter 4 1/4" Length of casing 52'

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion

BAILING OR PUMPING TEST

Pumping rate G.P.M. Duration of test hrs.

Drawdown more ft. Date

Developed capacity

Static level—depth to water 64 ft.

Pump installed by

WELL LOG

Formations: Sandstone, shale, limestone, gravel and clay

0 Feet

8 Ft.

N

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

Dunell Road

Scioto River

Dublin Corporation

E.

03413339

See reverse side for instructions

Drilling Firm Bow Plummer & SonDate Aug 22, 1957Address Dublin Ohio Route 1Signed Eddie Plummer

F-63

J43X

WELL LOG AND DRILLING REPORT

ORIGINAL
162State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

No. 166958

County FranklinTownship MuskratSection of Township 26or Lot Number 86Owner R. H. HaxsenAddress 100 Longview Drive, Dublin, OhioLocation of property 1/4 Sec 26, T. 26 N., R. 16 E., Co. Franklin, Ohio

CONSTRUCTION DETAILS

Casing diameter 4 1/2" Length of casing 82'

Type of screen — Length of screen —

Type of pump —

Capacity of pump —

Depth of pump setting —

Pumping rate 10 G.P.M. Duration of test 5 hrs

Drawdown 34 ft. Date April 6, 1954

Developed capacity 10 G.P.M.

Static level—depth to water 36 ft

Pump installed by —

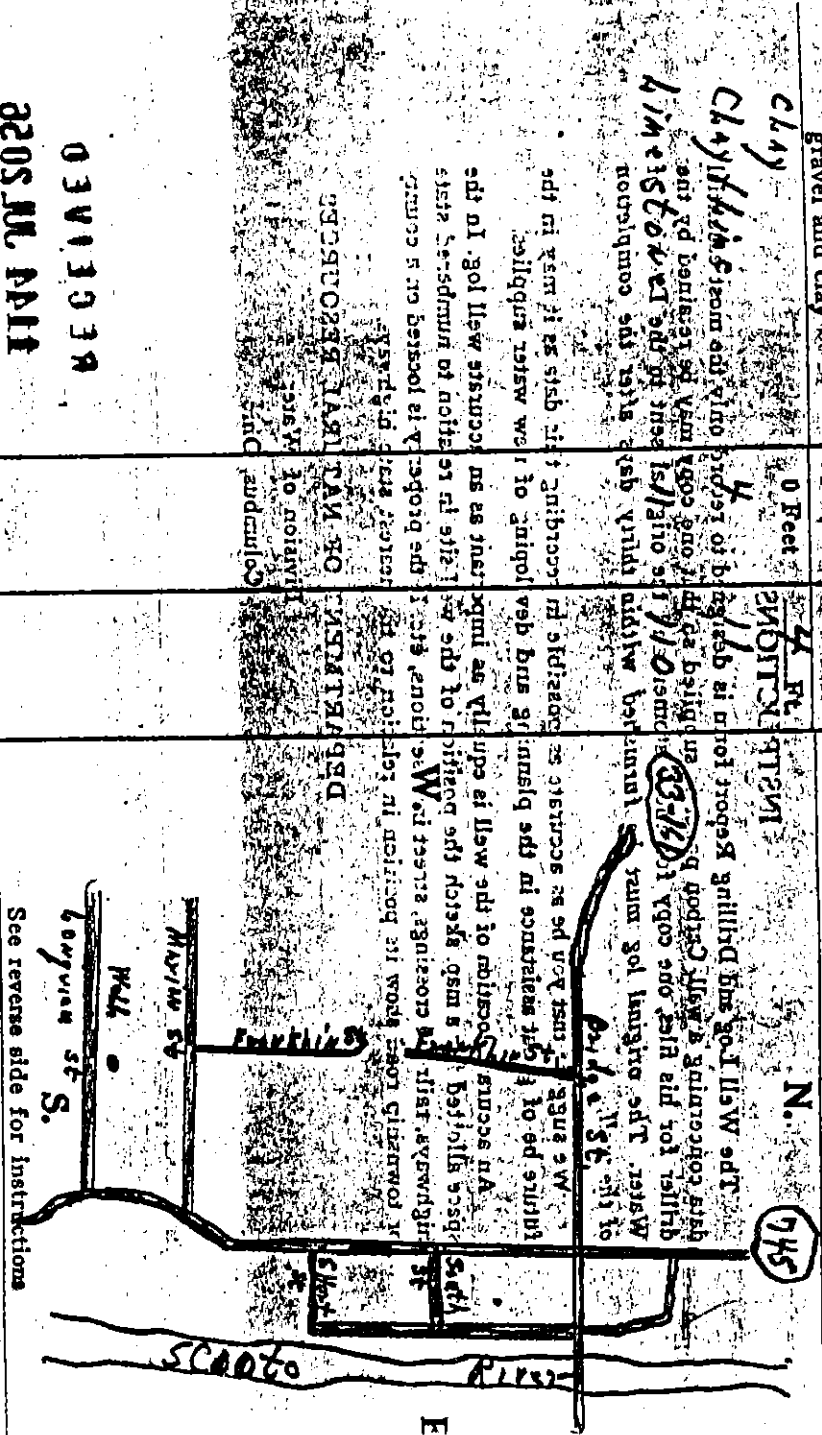
PUMPING TEST

WELL LOG

Formations Sandstone, shale, limestone, gravel and clayClay0 Feet4 Ft25 FtN.(745)

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, S.E. Intersections, County roads, etc.



23080239 JANUARY 1954

Drilling Ref No. 10

Address Midland City, Ohio, 43041Date April 6, 1954Signed Clair B. Buehler

WELL LOG AND DRILLING REPORT

ORIGINAL

12 15

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

No 170990

County Franklin Township WashingtonSection of Township
of Lot NumberOwner D. E. CollinsAddress 2980 Meriter RoadLocation of property 1/2 mile south of U.S. Route #33, 100 ft. N. of Collins Rd.

CONSTRUCTION DETAILS

PUMPING TEST

Casing diameter 4 1/4"Length of casing 10'Pumping rate 10 G.P.M. Duration of test 1 1/2 hrs.Type of screen Steel

Length of screen

Drawdown Steel Date Dec. 14,

Type of pump

Developed capacity 600 G.P.M.

Capacity of pump

Static level—depth to water 55' ft.

Depth of pump setting

Pump installed by

WELL LOG

SKETCH SHOWING LOCATION

Formations encountered
Sandstone, shale, limestone,
gravel and clay

0 Feet

Clay

5 Ft.

D. E. Collins #33

Limestone

100 Ft.

Limestone

5 Ft.

Shale

Limestone

5 Ft.

at 85'

Shale

5 Ft.

Shale

Shale

5 Ft.

Shale

Shale

5 Ft.

Limestone

5 Ft.

Limestone

5 Ft.

03V13039

8263MAL 5786

See reverse side for instructions

Drilling firm M. J. DarterDate Dec. 15, 1958Address 419 West 1st Ave.Signed M. J. DarterColumbus, Ohio

7434

F-67

ORIGINAL

DEPARTMENT OF NATURAL RESOURCES

1500 Dublin Road.

No. 192180

Section of Township

11/11/11

113 Longview Ave. Linden, 13

BAILING OR PUMPING TEST

Pumping rate..... G.P.M. Duration of test..... hrs.

Drawdown 1424 ft. Date _____

Developed capacity: 1290 m.

Static level—depth to water—70 ft.

Pump installed by _____

14-00000

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.

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Jorge

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Naikun Rd

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Date 3-6-57

Signed Attn: Mr. Tolson

7435

DEPARTMENT OF NATURAL RESOURCES

Columbus, Ohio

Columbus, Ohio

Section of Township 95 Longitude 121° 15'
or Lot Number 10

Address NEWARK, N.J., BRIDGEMAN ST.

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WATER PUMPING TEST

Pumping rate 10 G.P.M. Duration of test 1 hrs.

Drawdown 7.50 ft. Date August 26, 1936

Developed capacity 10-C.R.M.

Static level—depth to water—0 /

Pump installed by _____

SKETCH SHOWING LOCATION

Formations, sections, etc.	Section and location	Locate in reference to numbered State Highways, County roads, etc.
Formations, sections, etc.	Section and location	Locate in reference to numbered State Highways, County roads, etc.
Sandstone, shale, limestone, gravel and clay	Section and location	Locate in reference to numbered State Highways, County roads, etc.

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from the

1. The Commission has received information from the public that the Commission's decision to grant the application for the proposed development is in breach of the provisions of the Planning and Development Act 2000.

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DEBARKMENT OF NATURAL RESOURCES
IN THE STATE OF MICHIGAN

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James D. ...

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WALL-70 S.

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midland Counties 1944
Signed *Chas. B. Bunting*

CLAIR BUSHONG, JR.
Rt. #1
MILFORD CENTER, OHIO
F-69



See reverse side for instructions

Date August 30, 1957

Signed John B. Swanson Jr.

CLAIR BUSHONG, JR. 7436

F-69

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES

Division of Water
1500 Dublin Road
Columbus, Ohio

No. 194857

County Franklin Township Washington Section of Township 75
Owner Jack Coffin Address Dublin Ohio Route 1
Location of property 75 Longhollow Rd. (Longhollow Dr.)

CONSTRUCTION DETAILS

Casing diameter 4 1/4" Length of casing 21'
Type of screen _____ Length of screen _____
Type of pump _____
Capacity of pump _____
Depth of pump setting _____
Date of completion _____

BAILING OR PUMPING TEST

Pumping rate _____ G.P.M. Duration of test _____ hrs.
Drawdown more ft. Date _____
Developed capacity _____
Static level—depth to water 49 ft.
Pump installed by _____

WELL LOG

Formations
Sandstone, shale, limestone,
gravel and clay

From _____ To _____

clay

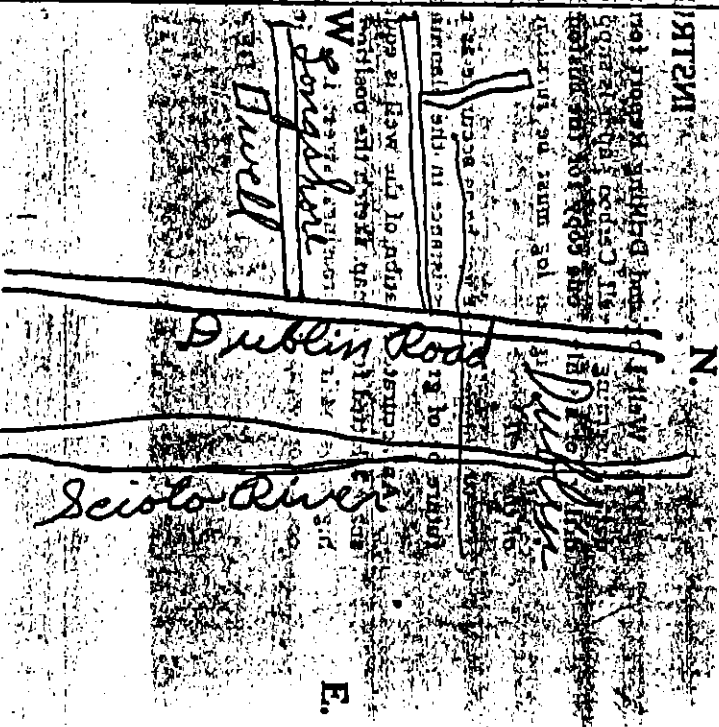
0 Feet

12. Ft.

N.

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highway, St. Intersections, County roads, etc.



1205 PM 5/10/1
1205 PM 5/10/1

See reverse side for instructions

Drilling Firm Wm. Plummet & Sons Date March 25, 1957
Address Dublin Ohio Route 1 Signed Eddie Plummet

WELL LOG AND DRILLING REPORT

ORIGINAL

PLEASE USE PENCIL
OR TYPEWRITER
DO NOT USE INK

1912

No. 280276

State of Ohio

DEPARTMENT OF NATURAL RESOURCES

Division of Water

1562 W. First Avenue

Columbus 12, Ohio

County Franklin Township Washington Section of Township 4
Owner Jack Cottrill Address Route 1 Dublin, O.
Location of property 37 Springfield Dr. Dublin, Ohio

CONSTRUCTION DETAILS

Casing diameter 4 1/4" Length of casing 90'
Type of screen _____ Length of screen _____
Type of pump _____
Capacity of pump _____
Depth of pump setting _____
Date of completion 17 Nov 62

BAILING OR PUMPING TEST

Pumping Rate _____ G.P.M. Duration of test _____ hrs.
Drawdown None ft. Date 57 ft.
Static level depth to water _____ ft.
Quality (clear, cloudy, taste, odor) Clear
Pump installed by Bo. Q. Tested 10 gal min.

WELL LOG

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

Formations	From	To	Sketch
Sandstone, shale, limestone, gravel and clay	0 Feet	3 Ft	
Clay	30 Ft	97 Ft	
Limestone	97 Ft	100 Ft	

See reverse side for instructions

Drilling Firm Benn & Summers Date 19 Nov 62
Address Route 1 Dublin, Ohio Signed Eddie Summers

DEPARTMENT OF NATURAL RESOURCES

Division

65 S. Front St., Rm. 815

Phone (614) 469-2646

Columbus, Ohio 43215

Section of Township

Address 2007 Magnolia St, DC 20004

BAILING OR PUMPING TEST
(Specify one by circling)

(Specify one by circling)

Test Rate 15 G.P.M. Duration of test 9 hrs.

Drawdown 24.11 ft. Date 12-14-1967

17

Quality (clear, cloudy, taste, odor)

五、

Pump installed by Leavelle & Leavelle

SKETCH SHOWING LOCATION

State Highways, St. Intersections, County roads, etc.

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Date Jan 10/201

Signed

Arthur & Lumme

If additional space is needed to complete well log, use next consecutive numbered form.

State of Ohio

DEPARTMENT OF NATURAL RESOURCES

Division of Water

1500 Dublin Road

Columbus, Ohio

No. 202277

County Franklin Township Washington Section of TownshipOwner John H. Hovelt

Address

192 W. Main St. Dublin, OhioLocation of property Dublin, Ohio

CONSTRUCTION DETAILS

BAILING OR PUMPING TEST

Casing diameter 5" Length of casing 227' Pumping rate 10 G.P.M. Duration of test 2 hrs.
 Type of screen none Length of screen — Drawdown none ft. Date 7-19-58
 Type of pump donor Depth 10-20 ft. Developed capacity 10-20 G.P.M.
 Capacity of pump 10-20 G.P.M. Static level—depth to water 45 ft.
 Depth of pump setting 85 feet Pump installed by H. May
 Date of completion 7-26-58

WELL LOG

SKETCH SHOWING LOCATION

Formations
Sandstone, shale, limestone,
gravel and clay

From 0 Feet To 227 Feet

Sketch showing location in reference to numbered State Highways, St. Intersections, County roads, etc.

Donor
clay shale
limestone

0 Feet
 150 Feet
 15 Feet
 97 Feet

S. Route
161
Dublin Rd.

See reverse side for instructions

03V1303R

PROMAN 2535

Drilling firm H. MayDate 7-26-58Address W. Main St. OhioSigned H. May Jr.

J440

WELL LOG AND DRILLING REPORT

State of Ohio

DEPARTMENT OF NATURAL RESOURCES

Division of Water
1500 Dublin Road
Columbus, Ohio

No. 221769

County Franklin Township Washington Section of Township B-4
 Owner Jack C. Phillips Address 2980 Martin Rd., Dublin, Ohio
 Location of property 164 Sandwin Drive, Dublin, Ohio

CONSTRUCTION DETAILS

Casing diameter 6 Length of casing 10
 Type of screen 1 Length of screen 1
 Type of pump
 Capacity of pump
 Depth of pump setting
 Date of completion

BAILING OR PUMPING TEST

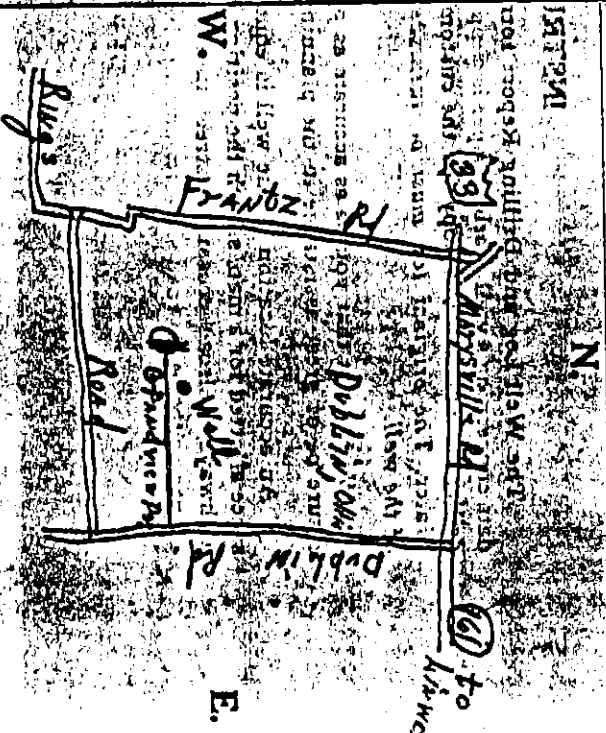
Pumping rate 10 G.P.M. Duration of test 1 hrs.
 Drawdown None ft. Date January 2, 1959
 Developed capacity 10 GPM
 Static level—depth to water 65 ft.
 Pump installed by

WELL LOG

Formations	From	To
Sandstone, shale, limestone, gravel and clay	0 Feet	5 Ft.
Clay	5	7
Clay	7	10
Limestone	10	16

SKETCH SHOWING LOCATION

Locate in reference to numbered
 State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm
 Address Mayaville, Ohio At #5

Date January 2, 1959
 Signed John Brubaker Jr.

WELL LOG AND DRILLING REPORT

State of Ohio

PLEASE USE PENCIL
OR TYPEWRITER
DO NOT USE INK

DEPARTMENT OF NATURAL RESOURCES

Division of Water
1562 W. First Avenue
Columbus, Ohio

No. 234461

County

Franklin

Township

Washington

Section of Township

Owner

Stevens Duncan

Address

7567 Riverside Dr.

Location of property

Lot 9 (160) Grandview Rd.

CONSTRUCTION DETAILS

BAILING OR PUMPING TEST

Casing diameter *4 1/2"* Length of casing *30'* Pumping rate _____ G.P.M. Duration of test _____ hrs.

Type of screen _____ Length of screen _____ Drawdown *None* ft. Date _____

Type of pump _____ Developed capacity *1.4* g.p.m. _____

Capacity of pump _____ Static level—depth to water *71* ft.

Depth of pump setting _____ Pump installed by _____

Date of completion _____

WELL LOG

SKETCH SHOWING LOCATION

Formations
Sandstone, shale, limestone,
gravel and clay

From top

To

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.*clay**6 Ft**N.**limestone**100'**S.**0 to 10 feet**0 to 10 feet**0 to 10 feet**E.**0 to 10 feet**0 to 10 feet**0 to 10 feet**Well**Grandview Rd**Cooperation**0 to 10 feet**S.*

See reverse side for instructions

Drilling Firm

East Plummet & Sons

Date

Sept 29, 1959

Address

Dublin Ohio Route 1

Signed

Edie Plummet

WELL LOG AND DRILLING REPORT

State of Ohio

PLEASE USE PENCIL,

DEPARTMENT OF NATURAL RESOURCES

OR TYPEWRITER.

Division of Water

DO NOT USE INK.

1562 W. First Avenue

No. 247804

Columbus, Ohio

County FranklinTownship Washington

Section of Township

Owner Jacob ColvardAddress 3000 MartinLocation of property 1134 Grandview Dr. Dublin Ohio

CONSTRUCTION DETAILS

BAILING OR PUMPING TEST

Casing diameter 1 1/4" Length of casing 90'Pumping rate 18 G.P.M. Duration of test 18 hrs.Type of screen Length of screenDrawdown 18 ft. Date

Type of pump

Developed capacity

Capacity of pump

Static level depth to water 70 ft

Depth of pump setting

Pump installed by

Date of completion

Bail tested 129 ad Pannin

WELL LOG

SKETCH SHOWING LOCATION

Formations Sandstone, shale, limestone, gravel and clay

Sketch showing location in reference to numbered State Highways, St. Intersections, County roads, etc.

0 Feet 20 Ft

N.E.

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See reverse side for instructions

S.

Drilling Firm Sham Churner & SonsAddress 2100 28th St. N.W. Washington D.C. Signed Sham Churner

ATTACHMENT G: VISUAL SITE INSPECTION SUMMARY REPORT

The Visual Site Inspection Summary Report documents the activities and observations of representatives of the Ohio EPA during the April 26, 1991 VSI of the Ashland facility. This summary is, in part taken from, and serves as a complement to the VSI field notes (Attachment I) and the VSI Photograph Log (Attachment H) that also accompany this report. Observations and findings from the VSI comprise the basis for much of this report and provide the rationale for its findings.

Visual Site Inspection Summary

The following individuals participated in the VSI:

Jerry Boone	Ashland Chemical, Inc.
Jeff Kirk	Ashland Chemical, Inc.
Mike Mullier	Ashland Chemical, Inc.
Kae Lee	USEPA, Region V
Chris Hartford	Ohio EPA, DSHWM
Jeff Reynolds	Ohio EPA, DERR

At 9:00 a.m. Ohio EPA and USEPA representatives met with Ashland Chemical, Inc. representatives in a conference room of the R & D facility. Topics of this introductory meeting included the inspection agenda, plant safety practices, facility operations and processes (past and present), waste generation, collection, storage, disposal, and specific information about Solid Waste Management Units (SWMUs).

The meeting concluded at approximately 10:30 a.m. and was followed by the inspection of the facility's SWMUs and associated process areas. The inspection began in the South Bay area then proceeded to the tank farm, the Drum Storage Pad, the old Underground Storage Tank location, the Interim Drum Storage Areas, and a couple of the laboratories generating Ashland's wastes.

The group then returned to the conference room for a closing meeting. Ohio EPA made some information requests at this meeting for further information on SWMUs, a facility map with SWMUs located, etc. Following this meeting Jeff Kirk rejoined the group (he had left during inspection of the South Bay Area). All others listed were present during the entire inspection.

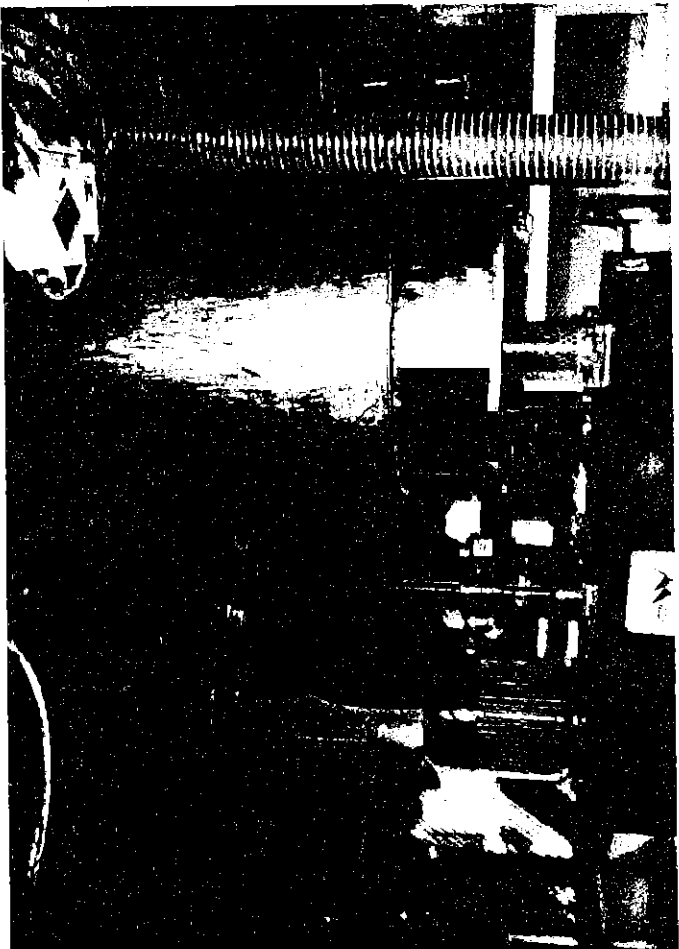
The VSI concluded at approximately noon on April 26, 1991.

ATTACHMENT H: PHOTOGRAPH LOG

The photographs in this attachment document the VSI as follows:

<u>Photograph #</u>	<u>Object</u>	<u>Remarks</u>
1	Mixing Unit (#1)	Located in South Bay (#2)
2	Unused Chemicals	Located in South Bay (#2)
3	Unused Chemicals	Located in South Bay (#2)
4	Solvent Pipes to Tank Farm	Located in South Bay (#2)
5	Waste Tank #8 (#3)	Located in Tank Farm
6	Waste Tank #9 (#4)	Located in Tank Farm
7	Waste Transfer Lines	Located in Tank Farm
8	Tank Farm	Contains SWMUs #3 & #4
9	Water Well House	Located on Drum Pad (#5)
10	Hazardous Waste Drums	Located on Drum Pad (#5)
11	Northern 2/3 Drum Pad	Waste Section of Pad (#5)
12	Drum Storage Pad (#5)	Fenced
13	Interim Drum Storage Area- Inside (#6)	One Drum Being Filled (with Funnel)
14	Interim Drum Storage Area- Outside (#7)	All Drums Being Filled
15	Former Underground Storage Tank Area (#8)	Removed 1988

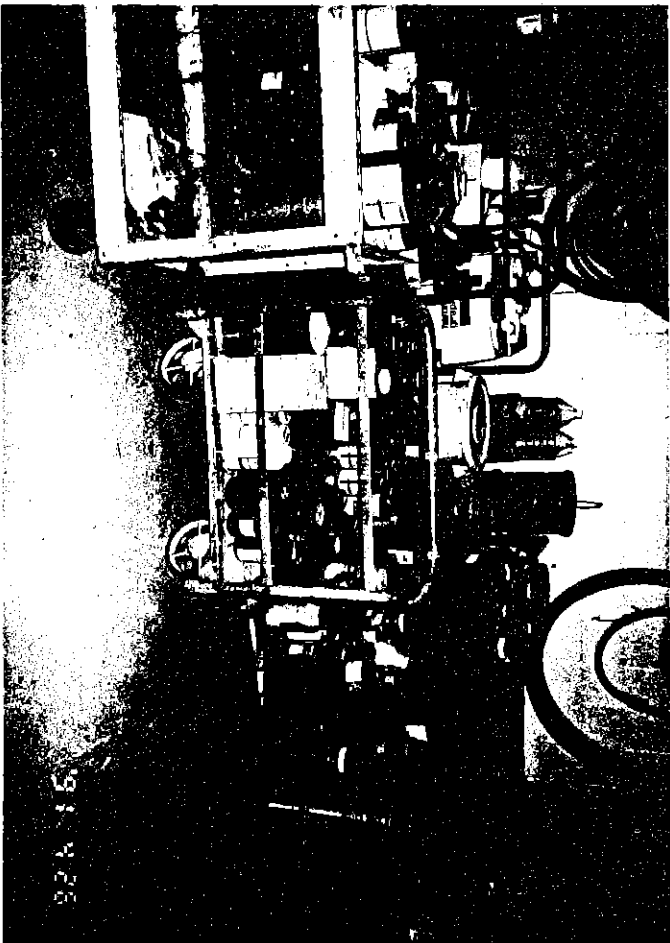
Note: Solid Waste Management Numbers in Parentheses



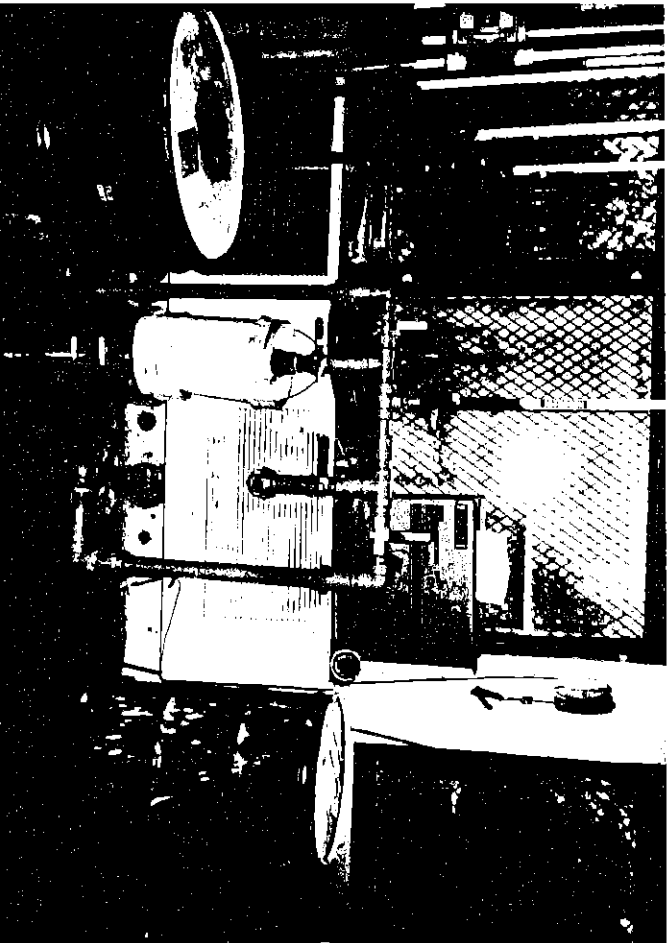
- 1) Mixing Unit (SWMU #1) Located in South Bay Waste Management Area (SWMU #2). Unit is mobile.



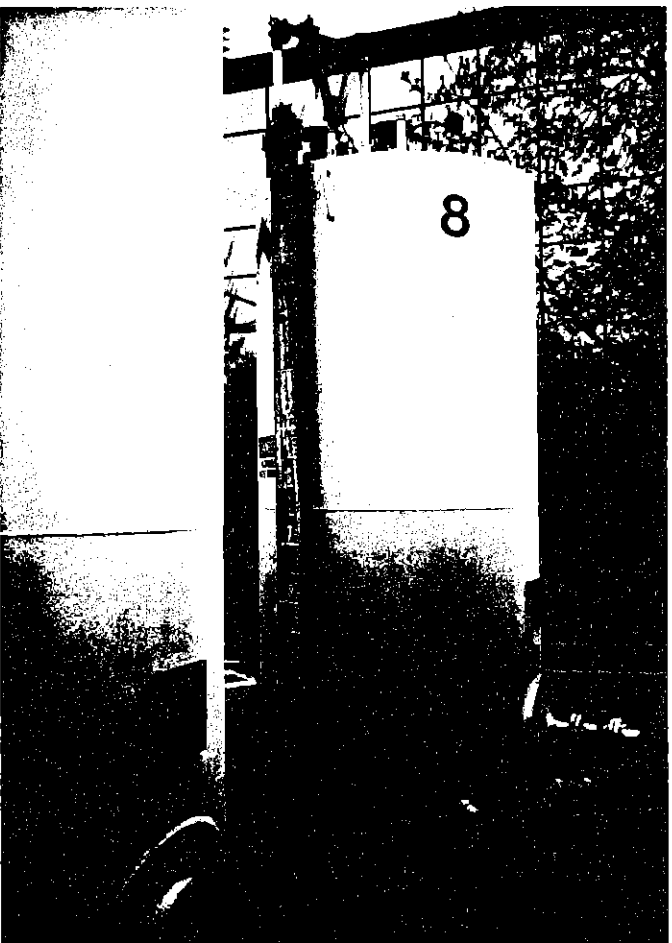
- 2) Unused chemicals ready for shipment to universities. Located in South Bay Waste Management Area (SWMU #2).



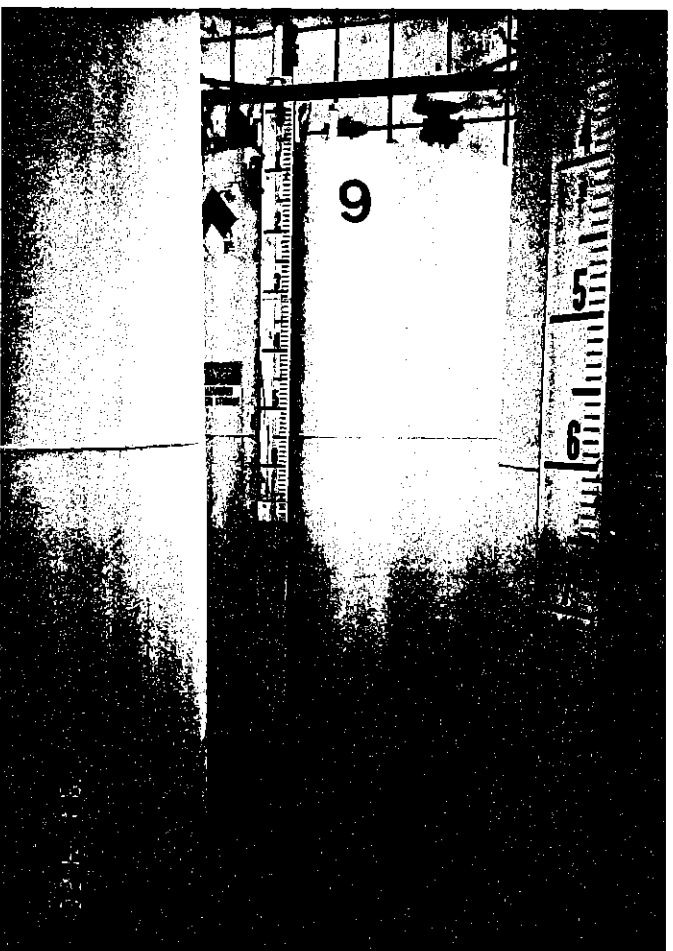
- 3) Unused chemicals not yet slated for shipping. Located in South Bay Waste Management Area (SWMU #2)



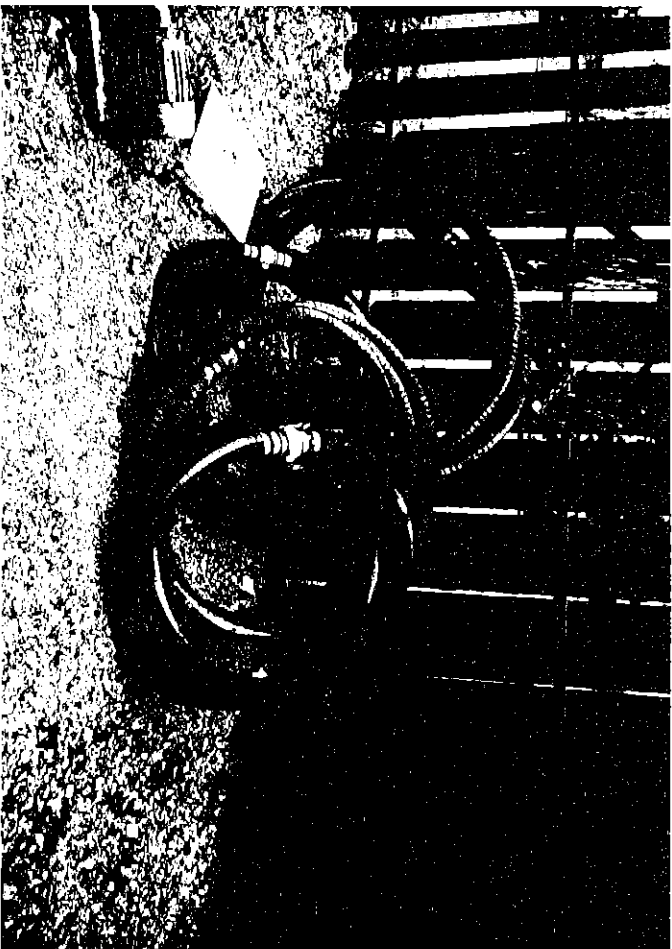
- 4) Waste solvent pipes leading to Waste Storage Tanks #8 (SWMU #3) and #9 (SWMU #4). Pipes located in South Bay Waste Management Area (SWMU #2).



5) Waste Tank #8 (SWMU #3) located in Tank Farm.



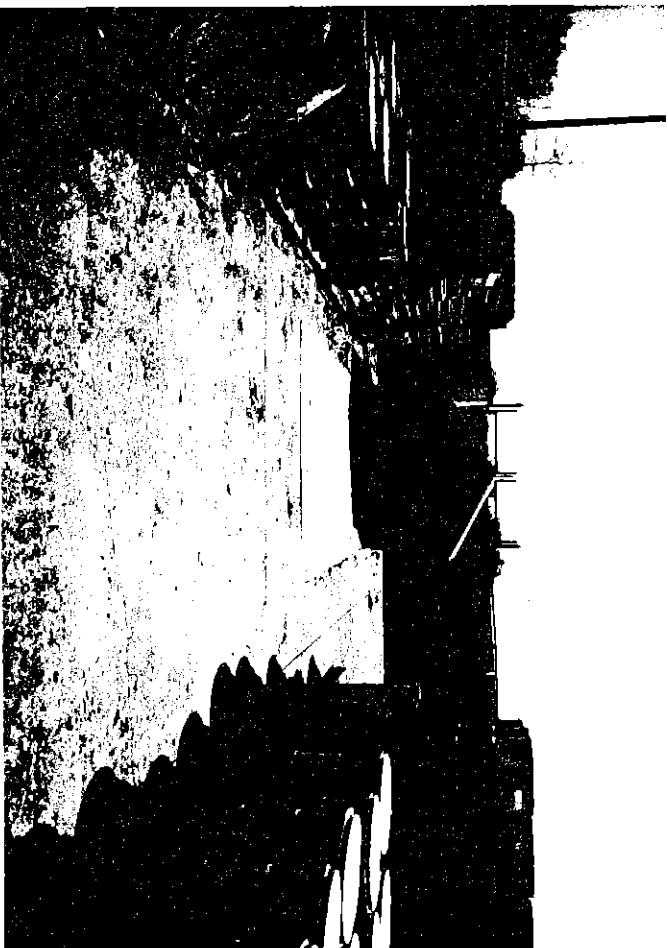
6) Waste Tank #9 (SWMU #4) located in tank farm.



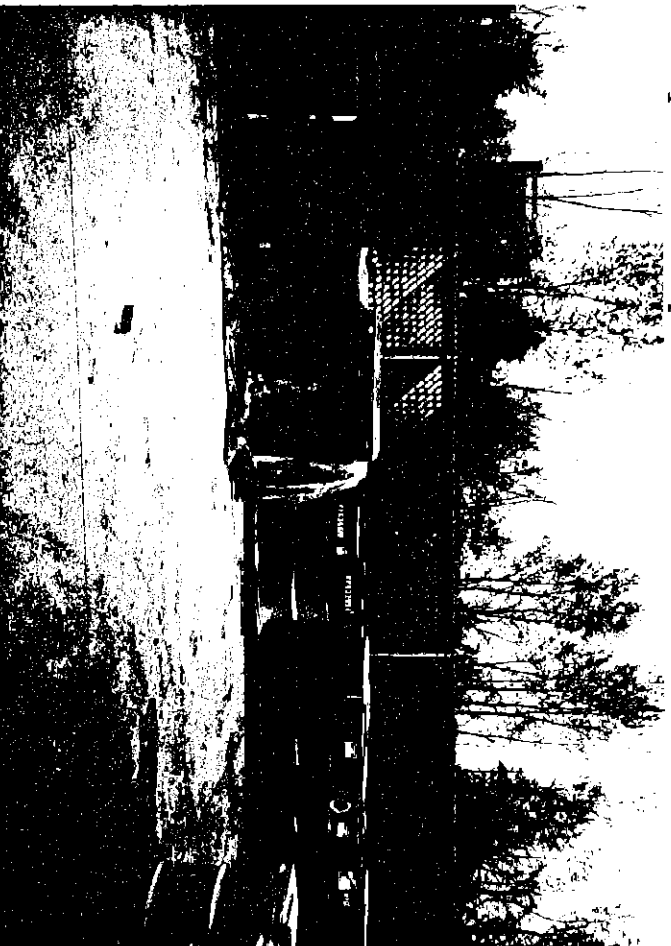
- 7) Waste transfer lines located in tank farm. Used to connect tanks with waste hauling trucks.



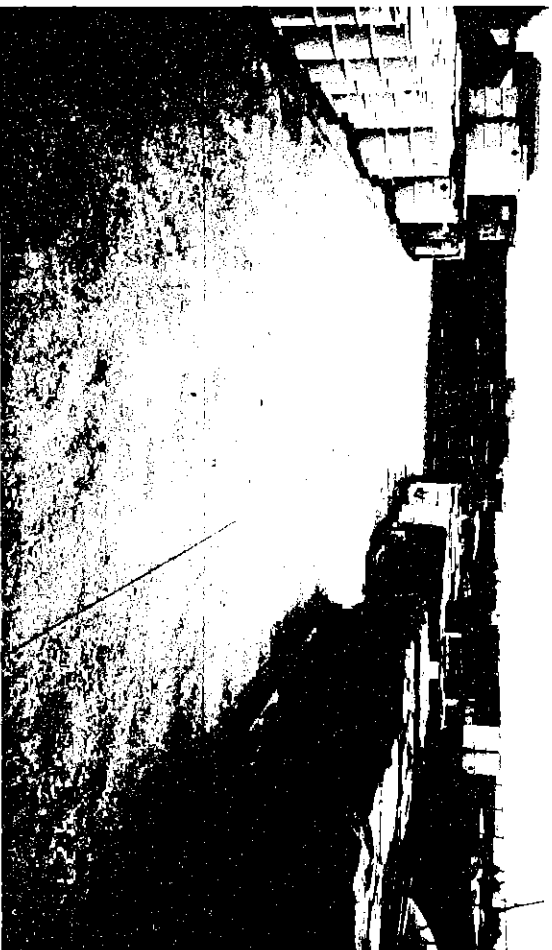
- 8) Tank farm containing Waste Storage Tanks #8 (SWMU #3) and #9 (SWMU #4). Note waste lines at left leading from South Bay (SWMU #2) to tank farm.



- 9) Water well house located on northeast corner of Drum Storage Pad (SWMU #5). New area of concrete in foreground is from when they had to repair water lines.



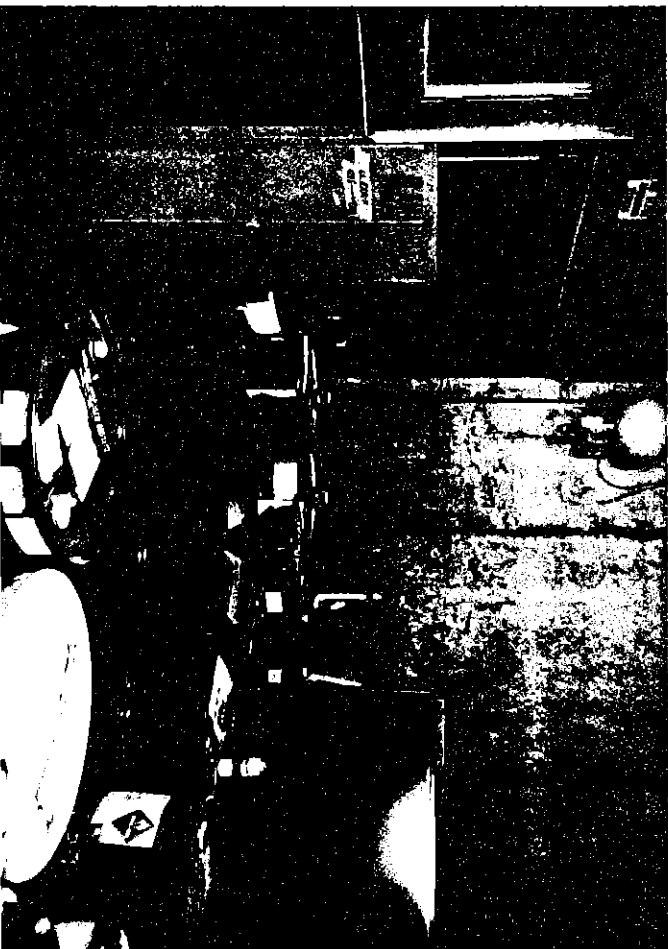
- 10) Hazardous waste drums stored under tarpaulin. Located at northwest corner of Drum Storage Pad (SWMU #5).



- 11) Northern two-thirds of Drum Storage Pad (SWMU #5). This area used for hazardous waste, non-hazardous waste, and product storage. Southern portion of pad is used for maintenance storage.



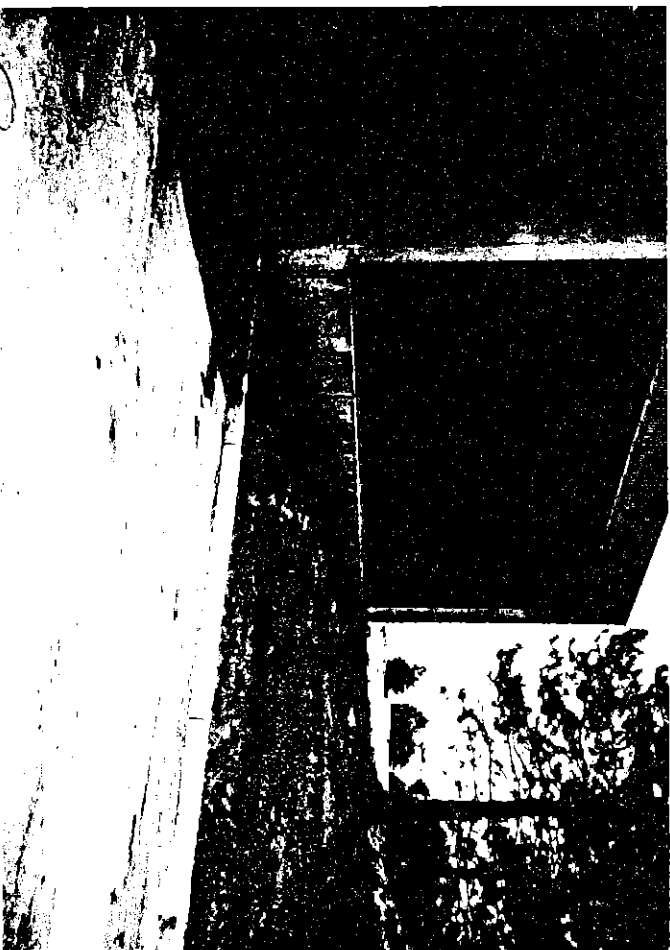
- 12) Outside of Drum Storage Pad (SWMU #5). Area is fenced and locked.



- 13) Inside Interim Drum Storage Area (SWMU #6). Drum with funnel is the only waste drum. Underground Storage Tank (SWMU #8) used to connect to this room through wall at left.



- 14) Outside Interim Drum Storage Area (SWMU #7). All drums are in the process of being filled.



- 15) Former Underground Storage Tank Area (SWMU #8). Tank was removed in 1988. Used to connect to Inside Interim Drum Storage Area (SWMU #6) through a hole (visible in photo as a gray spot) in the brown wall.

ATTACHMENT I: VSI FIELD NOTES



off with

fill PR data gaps - in readings

Get facility up to take

For each sum

Info on:

① Unit - choices. Condition, 2nd Edition, etc.

② Most drives - Magnetic tape waste?

③ Poln. Migration Pathways

④ Evidence of Release

⑤ Exposure Potential - Area around 100' - 150' from tank. potential release, strong forces, etc.

4/26/91

40. 6

Esch level chert. - Dublin

VST

Safety - Richards, copy 1/5

presentation to employees on env. waste mgmt.

4-3-10-10

Reduce waste policy 2 Warm Bath Kit

Male and Female Reduction 11 gmt-1 - 135 wt 4% / 100%

w/ another tapes etc.

space reduction & waste mgmt. sell these to 3rd party firms

some and larger purchased outside

They're waste as anything that does not end up

in a finished product

i.e. solvent engg., cooling water, electric, steam (w. & ext.

conc. on down. wastes through

Ashland

chem waste 3 way spgs.

① generation ② tracking ③ disposal

Internal waste Profile sheets - no change logs for waste
Yes or no TELL conditions - listed on back

Hartof then system - keeps track 1/83/1 down - 53g.

Haz. waste or Non-Rag

assign EPA# also labels - damaged / shipped etc.

After Filled out start

② Tracking - plug into computer

date on resident is date when declared waste - critical note
can ask computer for drums by date declared a waste
organize alphabetically w/ then date

also date plugged into tank or

may be unable to plug in tank the viscous, 1500 gpm etc

walkers here too S = system R = Res

Waste only to incineration

70% 20% to Syslab as cement 42/111 fuel

Then wastes 1/4 solvent, resins - high Btu values
very little organics

13 spec. data. all R & D then place here

no heavy metals

what can't use a fuel goes to Ross - for indiv.

down incineration

to burn > 5,000 Btu

they have 10-15,000 Btu due to resin compds.

Wastes to holding tanks

Tanks emptied when shipped out but only cleaned annually - hire contractor then inspected by outside eng. firm for integrity, tankings - no conversion like waste always compatible don't pour old polymers together

Waste reduction in last 5 yrs. esp. last.

900 drums in '88 500 in '89 735 in '90

cut from 200,000 + FY '88 to 130,000 in '89 260,000 in '90 down further in '91

have Lee wants to report

How did they reduce change divisions 3X disposal cost (at not overall) affects mg's bonuses etc.

Buy emphasize Reduce Reuse Recycle - Saves money, good business

when gets scraps or buy quantities - only buy what you need even if costs almost as much as larger qty. Estimate waste etc. up front before generate only have pilot plant - so difficult to do here on small scale - but successful

Brand New Projects - eval. before start - by products, potential disposal probs. (known) at plant eventually

may can program before start it

Disposal > generation due to buying from per. yr. avoid cut next year

Resins etc. largest waste Volumes
1 PAB chipboard picked up soon - by TRCA
Drum from capacitors on furnace - bought new system
sold old one - drummed capacitors through

Genome
Bgh
BGF
Ksh

Proces program how waste generated - Waste Program
Labs. 2 1/2 or 5 g. safety can containers for waste
- take can empty into specific drum
when full sorry Bore - takes over till
ent waste Profile sheet

Pilot Plant genomes 2 or 3 at a time

generate more waste per product in R&D than in plant

★
are drums
grown by
date

Facility reevaluated ops. - no need for Part B
Close Plant within couple weeks. - oper. < 90 days
Avoid 90 days on computer easily (a generation)

Training MM - seminars/lectures on drum waste mgmt
update on laws through special service - monthly;
MPE & JB 2 day taxis for waste mgmt.

Hazwoper - emergency resp. training w/ Rgt. Hqs. / Spills mstr, et
Monthly safety Mgt., safety inspections

5 WMS

UST - removed '88 stainless steel
used to store solvent waste - no chlor. - East Kingston
replaced by above ground
tank removed and cut into pieces
chlor. solvs. tank were few ppb.
maybe more industrial impurities
removed overseen by Chris ~~at~~
Kee Lee was in spec/certification

OLSON STORAGE PAD -

closure plan in couple weeks 30 day storage

Well on Pad

Well installed in 1970-71 w/ bldg.

Well supplies water for this and Olson Bldg. (Bld)

3rd Bldg. on city water

Pad Built in 77-79?

City water expensive but being evaluated

Full water analysis in '85 by Dayton Lab

1/91 OSHA ^{analyzed} tested for analysis

water from well undisturbed

sampled again in April ^{quarterly}
serve ~~to~~ <1000 (1000 in 3 bldgs)
(only some)

analysis on sink water - chlor. well

water analyzed outside - even though they do
sanitized work for outside firm

use lab's from OLEPA 1st of 4 sent
but says MAGI lab on results sheet
uniform etc. not on there
open. Over storage. Pul < 90 days now

Occas. lab clean up - use lab pack containers
had master 1st sent to UNIVASTOS, should send
downs - to Miami U. more will go to Wright st

Tanks 8+9 Blending Tanks

all piping tanks above ground
examine spent solus. w/ pumpable resins
make resin viscosity suitable for binning
decided w/ OLEPA not front.

on 4 tank farm other 2 for solvents
do annual integ. test
'93 have to not run res. (based on tank age)
may decide to close tanks in '93 - if can't

Mixing containers / Blending but haven't used in
long time - at least not for waste
on wheels at 100 g all/mms
use to make adhesives/emulsions
used to use for too viscous resins

⑥ Tanker Drum Storage Area (5?)
where 1 or 2 people empty small qts.
over in golf. storage room
now outside by loading area

⑦ South Waste Mgmt. Area (Not Identified,
storing Area where prog drums to tanks
A mixing area near 3 tanks
300' above ground pipes.

⑧ South Bay Waste Mgmt. Area
100 yds to W.M. instead of 100 yds
from entrance/exiting, etc.

⑨ Mixing Unit - used here
and over, resin w/ more
solvents in green pipes from tank farm
to west

white fire solvent green waste
(on tanking high level alarm system)
activates inside and out
open 8:15 - 5:00 w/ some O.T.
24 guard security

Flare Drains go to bargeport in P.I.
pumped to C&S sewer NW sy = for

When operate drums / west Nymt.
Leakins closed w/ plug - contains spirit
only opened when fire flow

① Pic #23-(1) ~~Station~~ Mixing Unit in South Bay

Drawn detail by Dept. Includes w/ suggested #
then analyze and determine if can
Pump - write on drum
as send info to POSS. They have to
put on drum - info. like flashpoint etc.

Tank farm just south of South Bay

- ② Chem. going to Unit East wall of SG
- ③ maybe " " West wall of CB
- ④ Solvent Pops from Tank farm to SG

New Role

East tanks are waste tanks
#9 3000 g capacity NE
#8 2000 g SE
west tanks are solvent
also 3k g and 2k g

Do they
Have
Nymt
when I am
out swimming

Ash # on top drums
 Ross # on gills
 spray paint then spray paint #s on

adders
 low of
 was with
 cover drums for shipping w/ plastic
 Ross won't take wet drums
 so need to cover tops

(5) NO. well on drum storage pad looking East.
 SKIPPED #s? w/ area now concrete for west side well base

then say walk on left
 and product etc. on right of pic.

(c) 11 Az. Drums east by NE
 engine column #41

(2) 12 N Drum storage Area - now has drums

pad involved no sign of spill
 has drums always in same corner of pad

has be remains' control storage area w/ dikes
 for has waste even though not going for Part B
 goes around pad

15x30' Sdg to N W drum storage pad

Refing. provide storage

Emergency Telephone S of pad E of driveway

Map GUMM checks.
 Seal construct mater.
 N.L. history

Labs - std. cons or buckets for viscous stuff

* Asked for Map R & D Obj. w/ SW/MU/reated
 construction materials & SW/MU ages

* or cool down from 6/29 to now?

4/28

PRELIMINARY REVIEW REPORT (PR)
RCRA FACILITY ASSESSMENT (RFA)

1. Facility Name ASHLAND CHEMICAL INC. - DUBLIN
EPA ID # OH0 042311209
Preparer JEFFREY W. REYNOLDS - OHIO EPA
Date 8-31-90

2. General Description of Facility and Processes:

A. Description: THIS IS THE MAIN RESEARCH AND DEVELOPMENT FACILITY FOR ASHLAND CHEMICAL. IN THIS CAPACITY, THE FACILITY IS INVOLVED IN RESEARCH IN FOUNDRY PRODUCTS, POLYESTER RESINS, SPECIALTY POLYMERS, ADHESIVES, ELECTRONIC AND LABORATORY CHEMICALS, PETROCHEMICALS, INDUSTRIAL CHEMICALS, AND SOLVENTS AND POLYMERS. RESEARCH IS DONE IN THE LABORATORY AS WELL AS ON THE PILOT PLANT SCALE. DURING THIS RESEARCH, VARIOUS CHEMICALS ARE MADE AND BY-PRODUCTS ARE GENERATED WHICH, ALONG WITH OTHER WASTES, MUST BE ULTIMATELY SENT OFF SITE FOR TREATMENT, STORAGE, OR DISPOSAL.

B. Information on Solid Waste Management Units (attach additional sheets as needed):

<u>Unit</u>	<u>Release (yes/no/unknown/suspected)</u>
① UNDERGROUND STORAGE TANK (REMOVED 1988)	YES (REMOVED)
② DRUM STORAGE PAD	UNKNOWN
③ ABOVEGROUND TANK #8	UNKNOWN
④ ABOVEGROUND TANK #9	UNKNOWN
⑤ MIXING CONTAINER (BLENDING UNIT)	UNKNOWN
⑥ INTERIM DRUM STORAGE AREA(S?)	UNKNOWN

Specific Unit Information (prepare one for each unit):

A. Unit Type: UNDERGROUND STORAGE TANK Regulatory Status: PERMITTED - CLOSED
Age: 10 YEARS - REMOVED 1988
Capacity: 8,000 GALLONS
Period of Operation: 1978 - 12/87
Waste Type: D001, F003, F005
Volume: ABOUT 3 DRUMS ADDED / WEEK
Hazardous Constituents (attach separate sheet):

B. Unit Description: THE TANK WAS REMOVED IN 1988 AND CERTIFIED
CLOSED BY OHIO EPA - DIVISION OF SOLID AND HAZARDOUS WASTE
MANAGEMENT (DSHWM). IT WAS 21 FEET LONG AND 8 FEET IN
DIAMETER AND CONSTRUCTED OF STAINLESS STEEL. IT WAS USED
TO STORE WASH SOLVENT FROM THE CLEANING OF REACTORS IN
THE PILOT PLANT AND LINE FLUSH SOLVENTS. THESE SOLVENTS WERE
LATER INCINERATED OFF SITE.

THE TANK WAS LOCATED NEAR THE NORTHWEST CORNER OF THE R & D
BUILDING NEAR THE R & D LOADING DOCK.

Additional Information Needed: NONE

C. Monitoring Description (groundwater, surface water, etc.): SAMPLING OF SOILS DONE AFTER TANK REMOVAL (1988) INDICATED RESIDUAL CONTAMINANTS (METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, AND TOLUENE). SUBSEQUENT SAMPLING OF REMOVED SOILS SHOWED NO DETECTABLE LEVELS OF CONSTITUENTS OF CONCERN. SOILS WERE RETURNED TO EXCAVATION.

Additional Information Needed: NONE.

D. Environmental Setting: THE VST WAS LOCATED AT THE NORTHWEST
CORNER OF THE R & D BUILDING.

Additional Information Needed: NONE.

E. Evidence of Suspected Past or Current Releases: CONTAMINATION IN AREA OF
TANK REMOVED WITH TANK IN 1988. SUBSEQUENT SAMPLING OF
REMOVED SOILS SHOWED NO DETECTABLE LEVELS OF CONSTITUENTS
OF CONCERN. TANK WAS CERTIFIED CLOSED IN 1988.

Additional Information Needed: NONE.

3. Specific Unit Information (prepare one for each unit):

A. Unit Type: DRUM STORAGE PAD Regulatory Status: PERMITTED - OPERATING
Age: _____
Capacity: 440 DRUMS (24,200 GALLONS) _____
Period of Operation: _____
Waste Type: 0001-4, 6-8, 11, F001-3, 5, 7 _____
Volume: 900 DRUMS / YEAR _____
Hazardous Constituents (attach separate sheet): _____

B. Unit Description: THE PAD HAS AN AREA OF 8753 SQUARE FEET
AND IS CONSTRUCTED OF SIX INCH THICK CONCRETE. THERE ARE
NO DIKES ON THE AREA.

THE AREA IS ENCLOSED WITH A SIX FOOT NINE AND ONE HALF
INCH CHAIN LINK FENCE

A WATER SUPPLY WELL FOR THE FACILITY IS LOCATED ON THE
NORTHEAST CORNER OF THE STORAGE PAD.

Additional Information Needed: NONE

C. Monitoring Description (groundwater, surface water, etc.): IN 1985 A
SAMPLE OF WATER FROM THE WELL LOCATED AT THE NORTHEAST
CORNER OF THE DRUM STORAGE PAD WAS ANALYZED. NO
HAZARDOUS CONSTITUENTS WERE DETECTED IN THE SAMPLE.

Additional Information Needed: NONE.

D. Environmental Setting: THE STORAGE PAD IS LOCATED IN AN
AREA OF RELATIVELY FLAT TOPOGRAPHY AND IS NOT IN THE
100 YEAR FLOOD PLAIN.

Additional Information Needed: NONE.

E. Evidence of Suspected Past or Current Releases: NONE

Additional Information Needed: NONE

Specific Unit Information (prepare one for each unit):

A. Unit Type: ABOVEGROUND TANK #8 Regulatory Status: LESS THAN 90 DAY
Age: 12 YEARS TREATMENT - OPERATING
Capacity: 2000 GALLONS
Period of Operation: 1978- PRESENT
Waste Type: 0001, 0001/F003/F005
Volume: _____
Hazardous Constituents (attach separate sheet): _____

B. Unit Description: MIX LINE FLUSH SOLVENTS AND SPENT SOLVENTS
WITH WATER RESINS TO REDUCE THE VISCOSITY OF THE RESINS.
THE RESULTING MIXTURE IS SENT OFF-SITE TO BE BURNED
FOR ENERGY RECOVERY.
THE TANK IS LOCATED IN A TANK FARM WITH A GRAVEL FLOOR
AND GRAVEL DIKE.
IT HAS ABOVE GROUND PIPING.

Additional Information Needed: TANK SURROUNDINGS

C. Monitoring Description (groundwater, surface water, etc.): NONE

Additional Information Needed: NONE

D. Environmental Setting: UNKNOWN

Additional Information Needed: TANK SURROUNDINGS

E. Evidence of Suspected Past or Current Releases: NONE

Additional Information Needed: NONE

Specific Unit Information (prepare one for each unit):

A. Unit Type: ABOVE GROUND TANK #9 Regulatory Status: LESS THAN 90 DAY
Age: 12 YEARS TREATMENT - OPERATING
Capacity: 3000 GALLONS
Period of Operation: 1978 - PRESENT
Waste Type: D001, D001/F003/F005
Volume: _____
Hazardous Constituents (attach separate sheet): _____

B. Unit Description: MIX LINE FLUSH SOLVENTS AND SPENT SOLVENTS
WITH WATER RESINS TO REDUCE THE VISCOSITY OF THE RESINS.
THE RESULTING MIXTURE IS SENT OFF-SITE TO BE BURNED
FOR ENERGY RECOVERY.

THE TANK IS LOCATED IN A TANK FARM WITH A GRAVEL FLOOR
AND A GRAVEL DIKE

THE TANK HAS ABOVE GROUND PIPING.

Additional Information Needed: TANK SURROUNDINGS

C. Monitoring Description (groundwater, surface water, etc.): NONE

Additional Information Needed: NONE

D. Environmental Setting: UNKNOWN

Additional Information Needed: TANK SURROUNDINGS

E. Evidence of Suspected Past or Current Releases: NONE

Additional Information Needed: NONE

Specific Unit Information (prepare one for each unit):

A. Unit Type: MIXING CONTAINER(BLENDING UNIT) Regulatory Status: LESS THAN 90 DAY
Age: TREATMENT - OPERATING
Capacity: _____
Period of Operation: _____
Waste Type: 0001, 0001/F003/F005
Volume: _____
Hazardous Constituents (attach separate sheet): _____

B. Unit Description: THE CONTAINER IS USED TO MIX LINE FLUSH SOLVENTS
AND SPENT SOLVENTS WITH WATER RESINS TO REDUCE THE VISCOSITY
OF THE RESINS. THE RESULTING MIXTURE IS PUMPED TO TANKS
#8 AND #9 AND SUBSEQUENTLY SENT OFF SITE TO BE BURNED
FOR ENERGY RECOVERY.

Additional Information Needed: HOW / WHERE UNIT IS USED IN CONJUNCTION
WITH OTHER EQUIPMENT.

C. Monitoring Description (groundwater, surface water, etc.): NONE

Additional Information Needed: NONE

D. Environmental Setting: UNKNOWN

Additional Information Needed: WHERE AND HOW IS UNIT USED

E. Evidence of Suspected Past or Current Releases: NONE

Additional Information Needed: NONE

3. Specific Unit Information (prepare one for each unit):

A. Unit Type: INTERIM DRUM STORAGE Regulatory Status: NO PERMIT - OPERATING
Age: _____
Capacity: _____
Period of Operation: _____
Waste Type: D001-4, D006-8, 11, F001, 357
Volume: _____
Hazardous Constituents (attach separate sheet): _____

B. Unit Description: LEAVE DRUMS (23) IN AREA UNTIL FILLED WITH
SMALL QUANTITIES FROM LAB WASTE CONTAINERS (FIVE GALLONS EACH?)
THEN MOVE OUTSIDE TO DRUM STORAGE PAD. PREVIOUSLY LOCATED IN
SOLVENT STORAGE ROOM BUT NOW MOVED ELSEWHERE.

Additional Information Needed: WHERE IS THIS CURRENTLY LOCATED.

C. Monitoring Description (groundwater, surface water, etc.): NONE

Additional Information Needed: NONE

D. Environmental Setting: UNKNOWN

Additional Information Needed: LOCATION (S)?

E. Evidence of Suspected Past or Current Releases: NONE

Additional Information Needed: NONE

4. Visual Site Inspection (VSI)

A. Specific Objectives: INVESTIGATE THE SIX LISTED SWMU'S AND THE AREAS SURROUNDING THEM, OTHER POTENTIAL SWMU AREAS WHERE WASTE IS HANDLED OR THERE IS EVIDENCE OF A RELEASE, ANY HISTORICAL SPILL AREAS, AND ANY AREAS OF CONCERN (AOC).

FOR EACH POTENTIAL RELEASE AREA (SWMU, AOC, ETC) INVESTIGATE UNIT CHARACTERISTICS, WASTE CHARACTERISTICS, POLLUTANT MIGRATION PATHWAYS, EVIDENCE OF RELEASE, AND EXPOSURE POTENTIAL.

NOTE ANY EVIDENCE OF A SPILL/RELEASE SUCH AS GROUND DISCOLORATION, EVIDENCE OF RUNOFF, DISCOLORED VEGETATION, ETC.

DOCUMENT AND PHOTOGRAPH ANY RELEASES OF CONCERN NOTICED.

IDENTIFY THESE POTENTIAL RELEASE AREAS AND MARK THEM ON A SITE MAP.

Page No. A. 1.

SOLID WASTE MANAGEMENT UNITS AND MAJOR SPILLS

[illegible]

Page No. B.

Category	Description	Category	Description
1	LOCATION/SETTING/LAND USE/SIZE	5	OPERATIONAL HISTORY
2	INDUSTRY TYPE	6	REGULATORY STATUS
3	PRODUCTS PRODUCED	7	OTHER
4	RAW MATERIALS	8	

[illegible]

Page No. C.

SUBJECT C.	ENVIRONMENTAL SETTING, HYDROLOGICAL AND GEOLOGICAL CHARACTERISTICS
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Category	Description	Category	Description
1	GEOLOGY	7	SOIL DATA
2	WELL LOCATION/CONSTRUCTION ON-SITE	8	ATMOSPHERIC DATA
3	WELL LOCATION/CONSTRUCTION OFF-SITE	9	PHOTOGRAPHS/MAPS
4	GROUNDWATER MONITORING DATA	10	OTHER
5	SURFACE WATER/FLOW DATA & ANALYSIS	11	
6	FLOODPLAIN DATA	12	

[illegible]

Facility ASHLAND CHEMICAL INC. - DUBLIN

I.D. No. OH0042311209

Page No. D.

SUBJECT D. WASTE CHARACTERIZATION

Category	Description	Category	Description
1	SOLID WASTES - RCRA IDENTIFIED	4	WASTES - STATE IDENTIFIED
1a	Description/Constituents	4a	Description/Constituents
1b	Amounts placed/spilled - Data	4b	Amounts placed/released
2	SOLID WASTES-ENFORCEMENT IDENTIFIED	5	INSPECTIONS
2a	Description/Constituents	6	STATE PERMITS
2b	Amounts placed/released	7	WASTES - PUBLIC IDENTIFIED
3	SOLID WASTES-CERCLA IDENTIFIED	8	WASTES - OTHER IDENTIFIED
3a	Description/Constituents	9	OTHER
3b	Amounts placed/released		

ITEM	CATEGORY	UNIT/ SPILL	DESCRIPTION/DATES/COMMENTS	LOCATION OF INFORMATION
1	1a	UST	DESCRIPTION OF WASTES	UST CLOSURE PLAN/ PART B APPLICATION
2	1a	DRUM STORAGE PAD	" " "	DSHWM INSPECTION FILE/ PART B APPLICATION
3	1a	ABOVE G. TANK #8	" " "	DSHWM INSPECTION FILE
4	1a	ABOVE G. TANK #9	" " "	" " "
5	1a	MIXING- CONTAINER	" " "	" " "
6	1a	INTERIM DRUM STORAGE	" " "	DSHWM FILES
7	1b	UST	AMOUNT WASTE	DSHWM INSPECTION FILE/ PART B APPLICATION
8	1b	DRUM STORAGE PAD	" "	" "
9	5	UST	INSPECTIONS	DSHWM INSPECTION FILE
10	5	DRUM STORAGE PAD	"	" " "
11	6	UST	PERMITTED	DSHWM INSPECTION FILE/ PART B APPLICATION
12	6	DRUM STORAGE PAD	"	" "

Page No. E.

UNIT/SPILL: UNDERGROUND STORAGE TANK (REMOVED)

Category	Description	Category	Description
1	ENGINEERING DESCRIPTION/PHOTOGRAPHS	6	RCRA INSPECTIONS
2	WASTES	7	PUBLIC SUPPLIED INFORMATION
3	OPERATIONAL STATUS/DATES OF USAGE	8	LOCATION
4	PERMITS	9	OTHER
5	ADEQUACY TO PREVENT RELEASES	9	OTHER

[illegible]

Page No. E.

UNIT/SPILL: DRUM STORAGE PAD

Category	Description	Category	Description
1	ENGINEERING DESCRIPTION/PHOTOGRAPHS	6	RCRA INSPECTIONS
2	WASTES	7	PUBLIC SUPPLIED INFORMATION
3	OPERATIONAL STATUS/DATES OF USAGE	8	LOCATION
4	PERMITS	9	OTHER
5	ADEQUACY TO PREVENT RELEASES	9	OTHER

[illegible]

Page No. E.

UNIT/SPILL: ABOVEGROUND TANK #8

Category	Description	Category	Description
1	ENGINEERING DESCRIPTION/PHOTOGRAPHS	6	RCRA INSPECTIONS
2	WASTES	7	PUBLIC SUPPLIED INFORMATION
3	OPERATIONAL STATUS/DATES OF USAGE	8	LOCATION
4	PERMITS	9	OTHER
5	ADEQUACY TO PREVENT RELEASES	9	OTHER

[illegible]

Page No. E.

UNIT/SPILL: ABOVEGROUND TANK #9

Category	Description	Category	Description
1	ENGINEERING DESCRIPTION/PHOTOGRAPHS	6	RCRA INSPECTIONS
2	WASTES	7	PUBLIC SUPPLIED INFORMATION
3	OPERATIONAL STATUS/DATES OF USAGE	8	LOCATION
4	PERMITS	9	OTHER
5	ADEQUACY TO PREVENT RELEASES	9	OTHER

[illegible]

Page No. E.

UNIT/SPILL: MIXING CONTAINER (BLENDING UNIT)

Category	Description	Category	Description
1	ENGINEERING DESCRIPTION/PHOTOGRAPHS	6	RCRA INSPECTIONS
2	WASTES	7	PUBLIC SUPPLIED INFORMATION
3	OPERATIONAL STATUS/DATES OF USAGE	8	LOCATION
4	PERMITS	9	OTHER
5	ADEQUACY TO PREVENT RELEASES	9	OTHER

[illegible]

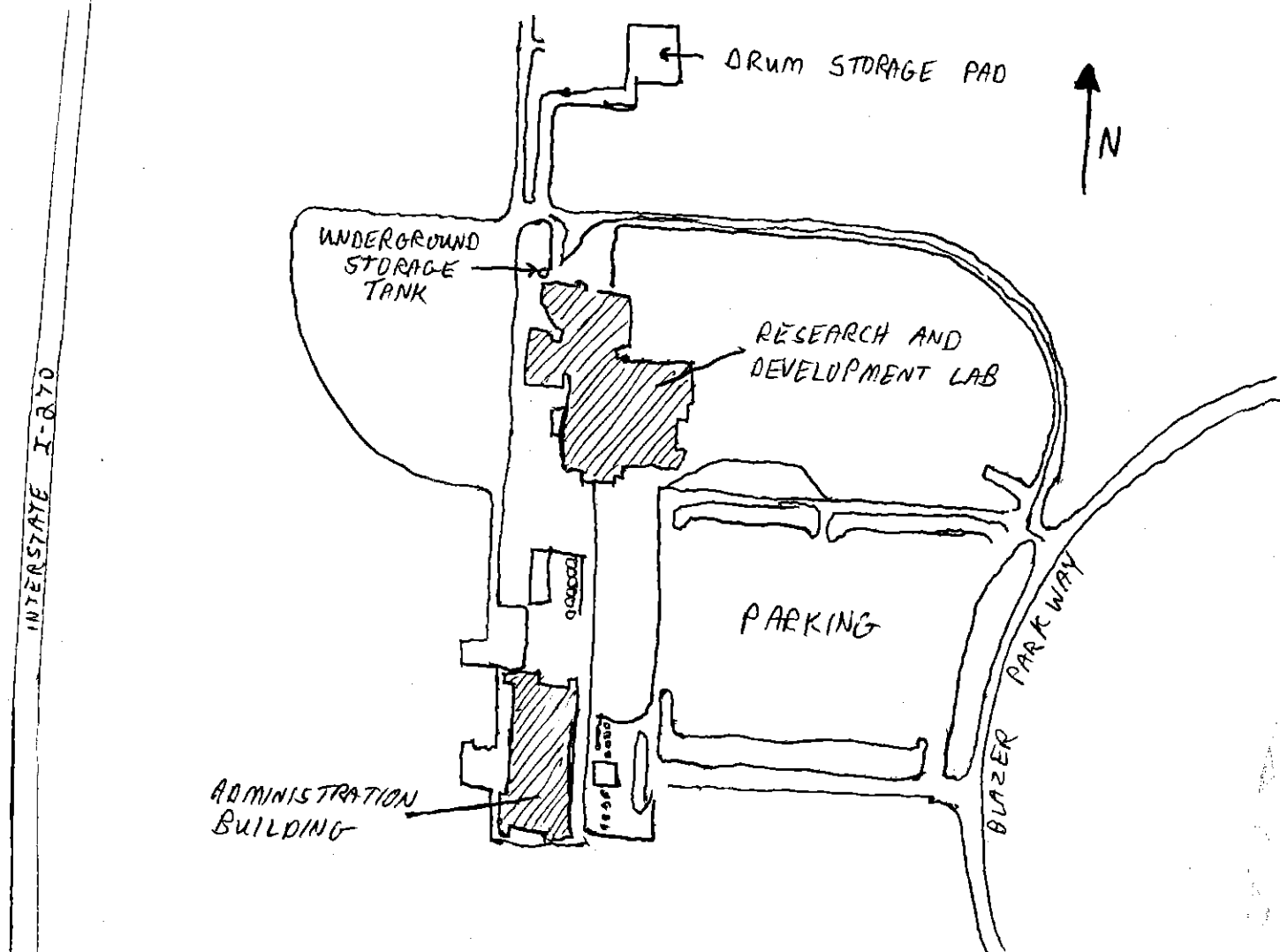
Page No. E.

UNIT/SPILL: INTERIM DRUM STORAGE

Category	Description	Category	Description
1	ENGINEERING DESCRIPTION/PHOTOGRAPHS	6	RCRA INSPECTIONS
2	WASTES	7	PUBLIC SUPPLIED INFORMATION
3	OPERATIONAL STATUS/DATES OF USAGE	8	LOCATION
4	PERMITS	9	OTHER
5	ADEQUACY TO PREVENT RELEASES	9	OTHER

[illegible]

Page No.



ASHLAND CHEMICAL COMPANY
RESEARCH AND DEVELOPMENT LAB
5200 BLAZER PARKWAY
DUBLIN, OHIO

MAP NOT TO SCALE

PROPOSED RCRA VISUAL SITE INSPECTION AGENDA

Facility: Ashland Chemical Company Inc
Dublin, Ohio

EPA ID #: OH00042311009

Facility Contact: Jeffrey Sirk
Environmental Engineer

Date of Inspection: April 26, 1991

Personnel Making Inspection:

Jeff Reynolds	Ohio EPA	(614) 771-7505
Chris Hartford	Ohio EPA	(614) 771-7505
Kae Lee	USEPA	(312) 886-6182

PURPOSE OF VISUAL RCRA INSPECTION

The Hazardous and Solid Waste Amendments (HSWA) of 1984 broaden the EPA's authority under RCRA to require corrective action for releases of hazardous wastes and solid wastes containing hazardous constituents at facilities that manage hazardous wastes. The corrective action authority extends to all solid waste management units (SWMUs) which may be potential sources of releases at the facility. The first phase of the corrective action program is performance of a RCRA Facility Assessment (RFA). The RFA includes a preliminary review (PR) of available file information, a visual site inspection (VSI) of the facility, and, if necessary, a sampling visit. A PR of file material has been performed for this facility, and a VSI has been determined to be necessary. The purposes of the VSI are:

1. To collect all available relevant information on solid waste management practices that have been used at the site;
2. To gain first-hand information regarding the proper identification, location, construction, configuration, function served, method of operation, and condition of each SWMU;
3. To confirm, by visual inspection and discussion with facility representatives, the information collected during the PR, and to update and/or correct this information as appropriate;
4. To survey the site for additional SWMUs and other areas of concern (AOCs) not identified in the PR;

- of concern (AOCs) not identified in the PR;
5. To identify potential sample points for possible future sampling activities;
 6. To review the site information and collect additional information to address the information needs identified during the PR; and
 7. To take photographs of all SWMUs and other areas of concern.

PRELIMINARY LIST OF SWMUs and OTHER AREAS OF CONCERN

The preliminary lists of SWMUs and other AOCs presented in Table 1 were developed based on a PR of Ohio EPA file material. If any of the units or areas listed no longer exist, the locations of the former units or areas should be identified by facility representatives during the VSI. Likewise, any other units or areas where solid wastes, both hazardous and nonhazardous, are treated, stored, or disposed, and areas where potentially hazardous materials such as chemical feedstocks, fuels, acids, caustics, etc., are stored, handled, or transferred, should be identified by facility representatives during the VSI.

TABLE 1
PRELIMINARY LIST OF SOLID WASTE MANAGEMENT UNITS

1. Underground Storage Tank (Removed 1988)
2. Drum Storage Pad (including water well)
3. Aboveground Tank # 8
4. Aboveground Tank # 9
5. Mixing Container (Blending Unit)
6. Interim Drum Storage Area(s?)

INSPECTION PLAN

Ohio EPA and USEPA personnel will perform the inspection. They will inspect past and present waste handling, storage, treatment, and disposal areas on site. Outdoor and indoor waste generation, collection, and/or accumulation areas in laboratories and production facilities will be inspected as necessary to acquire a complete understanding of waste handling methods. They also will inspect potential pathways for release of hazardous constituents into the environment. Facility staff will be interviewed to develop a better understanding of past and present waste management practices. Any available environmental monitoring or sampling data for characterization of the soils, groundwater, surface water (or runoff), and air quality at the site, will also be reviewed.

PROPOSED INSPECTION SCHEDULE

The schedule which follows has been prepared based on the PR and is intended to allow a visual inspection of all SWMUs and other AOCs at the site. The schedule may be adjusted as necessary at the time of the visit to accommodate unforeseen conditions.

The overall rationale of the inspection plan is to enable the team to inspect the entire facility. Some adjustments to the agenda may be necessary and can be made on site to accommodate facility staff, geographical location of the units, and/or operational constraints.

VSI AGENDA

April 26, 1991

- | | |
|--------------------|---|
| 9:00 - 9:30 a.m. | Introductory meeting with facility contacts; discuss agenda, health and safety considerations. |
| 9:30 - 11:00 a.m. | Discuss facility operations (both past and present) and wastes generated; process lines and waste collection, treatment, and disposal methods (including wastes shipped off site). Identify SWMUs and AOCs not found during the PR. |
| 11:00 - 12:30 p.m. | In conjunction with the discussions regarding facility operations, tour the facility-including storage and waste areas. |
| 12:30 - 1:30 p.m. | Lunch |
| 1:30 - 2:00 p.m. | Review information received before lunch, discuss any information gaps identified. |
| 2:00 - 2:30 p.m. | Inspect any additional units or areas not previously identified. |
| 2:30 - 3:30 p.m. | Closing meeting with facility contact(s). Discuss information needs generated by VSI activities. Obtain any additional information on SWMUs or other AOCs. |

LIST OF ADDITIONAL INFORMATION NEEDS

1. An explanation of how all waste streams are managed, from points of generation to areas of accumulation, to ultimate disposition.
2. Identification of site activities that occurred prior to the establishment of current operations, including previous site owners.
3. Current and historical diagrams showing industrial wastewater, sanitary sewer, and stormwater pipelines at the facility, including all sumps.
4. Recent facility map showing site boundaries.
5. Underground Storage Tank Notification or inventory of any current and former storage tanks; also, include the following information:
 - * location;
 - * capacity;
 - * type of construction material;
 - * dates and results of integrity tests;
 - * purpose;
 - * release history; and
 - * sampling results
6. SARA title III list of raw materials and emissions inventory.
7. Well documentation, including specifications, locations, yields, etc., (if available) and sampling results.
8. Any other soil sampling results, including sampling techniques, analytical results, other data, and actions taken.
9. For each SWUG and AOC in Table 1 (or otherwise known by Ashland), provide the following information:
 - * location on facility map;
 - * dates of operation;
 - * design features (e.g., material of construction, dimensions of unit, and release controls);
 - * history of unit's construction (e.g., indicate whether current release controls have been in place over the life of the unit);
 - * run-on/run-off controls at the unit;
 - * details on the method of waste transfer, including transfer release controls;
 - * details of any waste management practices over the life of the unit;

- * description of wastes managed and their volumes;
- * history of releases;
- * regulatory status; and
- * closure information, if applicable.

7-26-85

RCRA FACILITY INSPECTION FOR
SOLID WASTE MANAGEMENT UNITS

FACILITY NAME: ASHLAND CHEMICAL CO.
EPA ID NUMBER: OH 042 311 209
LOCATION (CITY, STATE): DUBLIN, OHIO
DATE OF INSPECTION: JULY 26, 1985
INSPECTOR(S): THOMAS M. BROWN
TITLE(S): INSPECTOR ASHWM - OEPA
FACILITY REPRESENTATIVES PRESENT: MARLENE HENDRICKSON, JERRY BOONE AND
DR. MULLER

1. Based on a review of State records, describe any land disposal units that have ever had a State permit for managing municipal or industrial (non-hazardous) waste at this site. Summarize the information which is available to indicate whether the waste may contain hazardous constituents and whether the unit may be leaking.

NO RECORD OF ANY LAND DISPOSAL UNITS

2. Based on a review of State records, describe any incinerators or other solid waste management units at this site (other than those treatment, storage and disposal units that have interim status) for which a State air pollution control permit has been issued. Summarize the information which is available to indicate whether the waste may contain hazardous constituents, and whether and whether the emissions from the unit may contain hazardous constituents.

NO INCINERATORS

3. Based on a review of State records (including CERCLA 103(c) notifications, complaints from the public, etc.) describe any known, suspected or likely releases of hazardous constituents to the environment from solid waste management units, except those spills not related to a specific unit, which were properly reported and cleaned up.

NO RECORD OF RELEASES INCLUDING THE OEPA
EMERGENCY RESPONSE DIVISION

4. Based on State records, describe any permitted injection wells at this facility and indicate whether injected the wastes may contain hazardous waste or hazardous constituents. Summarize the information which is available to indicate whether hazardous constituents may be escaping to the environment through improperly constructed or managed injection wells.

NO INJECTION WELLS

5. Did you see any of the following solid waste management units or evidence of prior existence of such a unit at the facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTES UNITS CURRENTLY SHOWN IN THE PART B APPLICATION

	<u>YES</u>	<u>NO</u>
• Landfill	_____	<u>X</u>
• Surface Impoundment	_____	<u>X</u>
• Land Farm	_____	<u>X</u>
• Waste Pile	_____	<u>X</u>
• Incinerator	_____	<u>X</u>
• Storage Tank (Above Ground)	_____	<u>X</u>
• Storage Tank (Underground)	<u>* X</u>	<u>X</u>
• Container Storage Area	_____	<u>X</u>
• Injection Wells	_____	<u>X</u>
• Wastewater Treatment Units	_____	<u>X</u>
• Transfer Stations	_____	<u>X</u>
• Waste Recycling Operations	_____	<u>X</u>
• Waste Treatment, Detoxification	_____	<u>X</u>
• Other _____	_____	<u>X</u>

6. If there are "Yes" answers to any of the items in Number 5 above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular, please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volume of wastes disposed of and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, location at facility, provide a site plan if available. You may simply reference the owner or operator's "Certification Regarding Potential Releases from Solid Waste Management Units" if the description contained therein appears to be accurate.

* 8'000 gallon stainless steel tank for 1003 and 5005 which is being beneficially reused/recycled; tank was not included on original PART B because of RECYCLE/REUSE exclusion, because of the new regs. it may have to be included

7. If previous inspection reports indicated the presence of solid waste management units other than those described above, what is known about them?

N/A NO REPORTS INDICATING SOLID WASTE MANAGEMENT
UNITS

8. Describe other information about existing or closed solid waste management units at this facility that should be considered in determining whether there may be a continuing release of hazardous waste or hazardous constituents from solid waste management units.

N/A NO RECORD OF ANY SUCH ACTIVITY

Name of Preparer: Rita Carnes
Date: 7 April 1987

Model Facility Management Plan

1. Facility Name: Ashland Chemical Co. Research and Development Laboratory
2. Facility I.D. Number: OHD 42311209
3. Owner and/or Operator: William M. Kahn, General Partner
4. Facility Location: 5200 Blazer Parkway
Street Address

<u>Dublin</u>	<u>Franklin</u>	<u>Ohio</u>	<u>43017</u>
City	County	State	Zip Code

5. Facility Telephone (if available): (614) 889-3695
Contact: Ms. Arlene Hendrickson

6. Recommendation for Regional Approach to the Facility: Check one

- ☒ Site Investigation
☐ Permit Compliance Schedule
☐ Corrective Action Order (may include compliance schedule)
☐ Other Administrative Enforcement
☐ Federal Judicial Enforcement
☐ Referral to CERCLA for Federally Financed or Enforcement Activity
☐ Voluntary/Negotiated Action
☐ State Action

Brief narrative in explanation of selection: a site investigation

is recommended to develop available information
and obtain additional information as needed.

a) If site investigation alternative is selected:

anticipated inspection date _____

State or Federal inspection _____

b) If Permit Alternative is Selected: Projected Schedule

Date of Part B Submission: _____

Date of Completeness Check: _____

Date for Additional Submissions (if required): _____

Date of Completion of Technical Review: _____

Completion of Draft Permit/Permit Denial: _____

Public Notice for Permit Decision: _____

Date of Hearing (if appropriate): _____

Date of Final Permit or Denial Issuance: _____

Description of any corrective action provisions to be included in permit -

1. Plan of Study of Remedial Investigation: _____

2. Remedial Investigation Report/Corrective Action Plan Cost

Estimate/Financial Mechanism: _____

3. Completion of Corrective Action: _____

c) If Corrective Action Order Alternative is Selected:

Estimated Date for Order Issuance: _____

Description of Provisions of the Order to be Completed by
Facility: _____

Description of Compliance Schedule to be Contained in Order:

d) If Other Administrative Enforcement Action is Selected:

Projected Date for Issuance of the Order: _____

Description of Provisions or Goals of the Order: _____

e) If Judicial Enforcement Alternative Selected:

Date of Referral to Office of Regional Counsel: _____

f) If Referral to CERCLA for Action Selected:

Date of Referral to CERCLA Sections: _____

g) If Voluntary/Negotiated Action Alternative if Selected:

Date of Initial Contact with Facility: _____

Description of Goals of Contact or Discussions with
Facility: _____

Date for Termination of Discussions if Not Successful:

Date of Finalization of Settlement if Negotiation Successful:

h) If State Action Alternative is Selected:

Date for Referral to State: _____

Name of State Contact: _____

Phone: _____

7. EPA Concurrence (to be completed by Region V, TPS staff)

(Check one)

- ☐ A corrective action order (or other enforcement action) was recommended, and HWEB concurs.
- ☐ No enforcement action was recommended, and HWEB did not object.
- ☐ Enforcement action was recommended, but HWEB did not concur at this time; we have revised the FMP accordingly.

(Check one)

- ☐ Action involving ERRB was recommended, and ERRB concurs.
- ☐ No ERRB action was recommended, and ERRB did not object.
- ☐ Action involving ERRB was recommended, that ERRB did not concur; we have revised the FMP accordingly.

(Check one)

- ☐ Based on our review, the FMP is hereby approved as drafted by ~~the~~ State.
- ☐ Based on our review, the FMP is hereby approved as amended.

Signature _____
(EPA Staff)

Date: _____

RCRA FACILITY ASSESSMENT (RFA) PRELIMINARY REVIEW (PR)

General

The scope of the RFA is to examine the site as a whole, but still maintain a strong emphasis on the SWMU's. The RFA screens each SWMU to determine the need for further action. An important step in the RFA is to develop a process flow diagram of the facility to track constituents from raw material to waste.

The initial step in the RFA process is preparing the Preliminary Report (PR). The PR consolidates the information currently available to determine if a release has occurred and not to characterize the extent of a known release. We are to determine the likelihood that a release has occurred. In the PR, it is most important to outline specifically what questions must be answered in the visual site inspection (VSI). The purpose is to document what is known now. This review should only last a day or two for simple sites. Upon completion of the RFA, you can determine the need and scope of the RI.

While completing the PR, you should keep in mind the following points:

- Keep detailed notes using the RFA Note Pad which has been provided.
- The result of the PR should be a plan for the VSI.
- A safety plan should be prepared before each site visit.
- Attach supplements to the PR as needed and appropriate. However, wholesale photocopying of past inspections and Part A's is not envisioned.
- Combine units on a single "Specific Unit" page if they are related.
- The exposure potential is to be deferred for later consideration unless there is an imminent hazard.
- Any permitted releases will not be routinely addressed here in the PR.

Instructions

Page 1

- Item 1. Most categories are self-explanatory. The date should be that date the PR is completed.
- Item 2A. Providing an adequate description of the facility is a critical exercise. It sets the framework for the PR by familiarizing the writer and reader to the site as it is currently understood. Depending on the site being reviewed, the following are examples of information which should be provided, if available: location;

size; operational description (process flow, raw materials, products produced, wastes produced, etc.); size of site; surrounding land use; general physiography; brief geology, etc.

The writer should be as brief and concise as possible.

- Item 2B. The intent of this section is to list all SWMUs and decide which units require any further investigation.

Unit: Provide a descriptor which uniquely identifies the unit and gives insight as to the function of the unit. For example: landfill, sedimentation pond I, north container storage area, etc. This descriptor should be consistently used throughout this process (RFA/RI/CA). Also provide a short description of waste (to address hazardous nature of the waste). For example: general H.W. (for municipal landfill), storm water (for run off control basins), etc. A more concise description will be provided later; here you are only attempting to decide which units need further investigation.

Release: Are there any known or suspected releases from the unit?

Page 2

You should prepare all sections under Item 3 beginning here for each unit. Units may be combined as appropriate

Item 3. Specific Unit Information

- Item 3A. Most of these categories are self-explanatory. However, for clarification:

Capacity: The maximum capacity of the unit.

Volume: The current amount of waste present, generation rate, or residence time, etc.

Waste Type: A detailed list of all wastes in unit. This could be a long list. If so, attach sheets as necessary with a reference here. This is needed to determine the list of hazardous constituents, if that proves necessary.

- Item 3B. Unit Description: Provide a concise, brief description of what is known about the unit (e.g., materials of construction, function, condition, and dimensions, etc.).

Additional Information Needed: List the points which need further work. Be specific as this becomes the framework for further study.

Page 3

- Item 3C. Monitoring Description: Describe the monitoring done at the site (e.g., groundwater, surface water, air, soil). For example, provide number of wells monitoring this unit, periods of sampling, parameters, frequency, etc.

Additional Information Needed: List the points which need further work. Be specific as this becomes the framework for further study.

Page 4

Item 3D. Environmental Setting: Include a description of the specific conditions where this unit is located.

Additional Information Needed : List the areas where information is lacking. Be specific as this may define additional sources which should be consulted to provide a description of the environmental setting.

Page 5

Item 3E. Evidence of Suspected Past or Current Releases: You should provide evidence used to determine a suspected past or current release. If no evidence is currently available, then "none" is appropriate. If a release is known or suspected, then provide the logical framework for such a determination.

Additional Information Needed: List the points which needed further work. Be specific as this becomes the framework for further study.

Page 6

Item 4. Visual Site Inspection (VSI)

Item 4A. Specific Objectives: Include a summary of all actions needed. Here is the place to bring all the areas needing further study at all SWMUs together. This will become the basis for the VSI and provides the framework for the SI and/or RI which may be completed at a later date.

PRELIMINARY REVIEW REPORT (PR)
RCRA FACILITY ASSESSMENT (RFA)

1. Facility Name Ashland Chemical Co.
EPA ID # Research and Development Laboratory
Preparer OHDO42311209
Date Rita Carnes
7 April 1987

2. General Description of Facility and Processes:

A. Description: Ashland Chemical's Research & Development Lab is located in the village of Dublin northwest of Columbus, within Ohio's glaciated till plains region. The topography is flat to gently rolling. Surface waters include Gosara Ditch to the north, George Geary Ditch to the west and southwest and Cramer Ditch to the southwest, all within 1000' of the facility. The surrounding land use is commercial and residential.

The facility is the main research and development facility for Ashland chemical. Research involves carbon black, foundry products, polyester resins, specialty polymers, adhesives, electronic and laboratory chemicals, petrochemicals, industrial chemicals and solvents, and polymers. Various chemicals and by-products are produced which ultimately are shipped off-site for disposal. The majority of these wastes are stored in 55-gal. drums on a storage pad north of the R&D Lab. In addition to these drummed wastes, wash solvent from the cleaning of reactors in the Pilot Plant is stored in an 8,000-gal. underground storage tank.

B. Information on Solid Waste Management Units (attach additional sheets as needed):

<u>Unit</u>	<u>Release (yes/no/unknown/suspected)</u>
i. Drum Storage Pad	no
ii. Underground Storage Tank	no
iii.	
iv.	
v.	
vi.	
vii.	
viii.	
ix.	
x.	

3. Specific Unit Information (prepare one for each unit):

A. Unit Type: Drum Storage Pad Regulatory Status: interim status
Age: _____
Capacity: 44,000 gal.
Period of Operation: _____
Waste Type: D001-4, D006-8, D011, F001-3, F005, F007
Volume: _____
Hazardous Constituents (attach separate sheet): _____

B. Unit Description: The drum storage pad covers an area of 8,753 ft² and is currently undiked. Three categories of hazardous wastes are stored on the drum storage pad: (1) spent organic solvent blends w/wc organic resins and monomers from research labs; (2) waste acids and plating wastes; (3) filtercake contaminated w/organic solvents.

The drum storage pad has a concrete base and is surrounded by a 6 ft 9 1/2 in. high chain link fence. Access to the pad is through two gates, one at the southwest corner and one at the northeast corner.

The well which supplies water to the facility is located at the northeast corner of the drum storage pad.

Additional Information Needed: further information is needed regarding date of use, period of operation, volume, and specific constituents stored on the pad.
Release prevention measures should also be noted.

C. Monitoring Description (groundwater, surface water, etc.): In July 1985
a sample of water from the well located at the northeast
corner of the drum storage pad was analyzed. No hazardous
constituents were detected in the sample.

Additional Information Needed: None

D. Environmental Setting: The drum storage area is located in an area of flat topographic relief. Surface drainage is normally limited to runoff from heavy rainfall. All catch basins on the property drain to Casgray Ditch north of the facility.

The water well which supplies water to the facility is located on the northeast corner of the drum storage pad.

The facility is not located within the 100-yr flood zone.

Additional Information Needed: None

4. Visual Site Inspection (VSI)

- A. Specific Objectives: Obtain information regarding dates of usage, period of operation, volume and specific constituents stored on drum storage pad.

3. Specific Unit Information (prepare one for each unit):

A. Unit Type: Underground Storage Tank Regulatory Status: interim status

Age: 7 yrs

Capacity: 8,000 gallons

Period of Operation: 1980 - present

Waste Type: spent solvents

Volume: ~8,000 gallons

Hazardous Constituents (attach separate sheet): toluene, xylene, methyl ethyl ketone, ethyl acetate.

B. Unit Description: The tank is 316 stainless steel and is 21'0" long and 8'0" in diameter. The shell of the tank is 1/4" thick. The tank has a 4" stainless steel draw pipe going to within 4" of the bottom of the tank and rising 3'6" above the top which is connected to the line which empties the tank to a tanker. There is also a 3" vent ~6" above the top of the tank which is attached to a vent pipe coming up through the ground. A 20" tank manway is bolted with an asbestos gasket. There is a 3" spare vent; and a 2" stainless steel fill pipe going with 6" of the tank bottom.

The tank is buried outside the R&D lab near the R&D loading dock. When the tank was installed a concrete slab was poured under it to anchor it. The tank was installed in 1980 and has a life expectancy of 23 to 250 years.

There is no waste feed cutoff system since wastes are manually pumped into the tank. The tank becomes full approx. once a year, since about 3 drums of waste solvent are pumped into it weekly.

The fill line for the tank is located in the solvent storage room which is unlocked during normal working hours.

Additional Information Needed: None

C. Monitoring Description (groundwater, surface water, etc.): None

Additional Information Needed: None

D. Environmental Setting: _____

Additional Information Needed: Information is needed on the
depth to which the tank is buried, depth to water table,
soil characteristics and subsurface geology.

E. Evidence of Suspected Past or Current Releases: None

Additional Information Needed: None

4. Visual Site Inspection (VSI)

A. Specific Objectives: A visual site inspection of the underground storage tank will not yield useful information.

Facility records should be examined, or personnel questioned, to determine depth of tank burial.

RFA NOTEPAD INSTRUCTIONS

General

When doing a file review for a RFA, it is essential that good notes are kept. This notepad is intended to be used to take notes while you are going through the files.

The format was chosen to meet the following five objectives:

1. It would provide a brief description of all information found to be pertinent to the RFA.
2. It would provide the exact location of the information so that if a particular piece of information were needed, for example for an order, one could go directly to the information without having to re-read a whole file.
3. It would provide a first-cut breakdown of the information into broad subject categories. (This was found to be useful when (1) it comes time to summarize the file search, as it saves having to re-read all of the notes each time a new item is addressed, and (2) when one is looking to compare information from several sources.)
4. It would be easily expandable to accomodate new information as it becomes known.
5. It would be intelligible to someone else who was looking at the notepad.

Please Note: THIS IS NOT A CHECKSHEET. It should be used in the following manner. You start reading a file and come across some pertinent information that you want to record. You first go to the subject page which most closely identifies the information. You then write your notes in the description column and location of information column. Finally, you look at the category description and choose the one that most closely describes the material. On occasion, you will come across information which could logically be located on more than one subject page. You can either put the information on both pages or make a reference back to a single page.

Page-by-page instructions

Page

Instructions

- A. Each time you come across a RCRA unit, SWMU or a major spill, you identify it on this page. You also identify the source of the information with a checkmark. Normally each unit will be a separate entry, but if there are several units that serve the same function in a single location, they could be lumped into one entry. Be sure that each unit is uniquely identified.

- B. Through F All of these pages have a similar format. The item column is a sequential numbering system. Every time the pages or location of the information changes, the item number should be incremented up to the next integer. The category column should contain one of the items from the description list at the top of the page. If none of the categories is applicable, use the "other" column or write in your own category. You can use more than one number for this entry. The description column contains your notes. Try to condense them as much as possible. However, they must be readable and make sense both to other people who look at the notepad and to yourself when you come to write your summary and conclusions. Be sure to include dates relating to the information. It is important to be able to order things chronologically so that you can follow the history of the unit or release. The location of information column is meant to document the location of the material well enough that if someone were to ask for a copy of the information you could go directly to the source and immediately locate it, without having to read through pages of non-relevant information.
- B. This subject page is used to document general facility information applicable to the facility as a whole, rather than to individual units.
- C. This subject page is used to document the hydrological and geological characteristics of the site.
- D. Waste characterization was given a separate subject heading rather than including it in the specific unit description. The reason for this is that you will get a lot of waste related information which does not identify which units dealt with the wastes. (A column has been added to note which units were involved when this information is available.)
- E. Each unit or spill identified on page A should have an individual page in this section. This information details the physical construction, operation, and condition of the units. Exposure and release information is recorded in the next section.
- F. This page is used to record information relating to known and suspected releases and to the potential for exposure. All of the media are identified separately. Although some of the information will be identified with a particular unit, and therefore could be put into Subject E, it was decided to keep all exposure and release information in one spot. The reasons for this are: (1) much information cannot be related to a specific unit, and (2) it makes it easier to compare information from different sources about a particular unit or release. With regard to the second point, one can sometimes relate releases whose sources are not known to specific units by comparing information from different sources.

Miscellaneous

No matter how many subject areas are included in a notepad, there is always information which does fit into any one. This page is to be used to record this information.

Site Map

For facilities with lots of units it is often useful to have a site map which you can refer to in the notepad without having to go back to other sources. This could be a copy of a Part B map or a hand drawn map.

Untitled Page

This page is intended to be a generic continuation page for any of the subjects B to F. This page gets inserted behind the original page (which should be numbered A.1, B.1, etc) and should be numbered in sequence (B.2, B.3, B.4, etc.).

Facility Ashland Chemical Co.

R+D Lab

I.D. No. OHDO42311209

Page No. A.

SOLID WASTE MANAGEMENT UNITS AND MAJOR SPILLS

Unit or Spill	L O C A T I O N O F I N F O R M A T I O N						
	Permit Applic	SWMU Questnr	NPDES Files	Enfrmnt Files	CERCLA Files	State Files	Other
1. Drum Storage Pad	✓					✓	
2. Underground Storage Tank	✓					✓	
3.							
4.							
5.							
6.							
7.							
8.							
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CERTIFICATION REGARDING POTENTIAL RELEASES FROM
SOLID WASTE MANAGEMENT UNITS

FACILITY NAME: Ashland Chemical Company R&D Laboratory

EPA I.D. NUMBER: OHDO42311209

LOCATION CITY: Dublin

STATE: Ohio

1. Are there any of the following solid waste management units (existing or closed) at your facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTES UNITS CURRENTLY SHOWN IN YOUR PART B APPLICATION

	<u>YES</u>	<u>NO</u>
◦ Landfill	<u> </u>	<u>X</u>
◦ Surface Impoundment	<u> </u>	<u>X</u>
◦ Land Farm	<u> </u>	<u>X</u>
◦ Waste Pile	<u> </u>	<u>X</u>
◦ Incinerator	<u> </u>	<u>X</u>
◦ Storage Tank (Above Ground)	<u> </u>	<u>X</u>
◦ Storage Tank (Underground)	<u> </u>	<u>X*</u>
◦ Container Storage Area	<u> </u>	<u>X**</u>
◦ Injection Wells	<u> </u>	<u>X</u>
◦ Wastewater Treatment Units	<u> </u>	<u>X</u>
◦ Transfer Stations	<u> </u>	<u>X</u>
◦ Waste Recycling Operations	<u> </u>	<u>X</u>
◦ Waste Treatment, Detoxification	<u> </u>	<u>X</u>
◦ Other <u> </u>	<u> </u>	<u>X</u>

2. If there are "Yes" answers to any of the items in Number 1 above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular, please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volume of wastes disposed on and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, location at facility, provide a site plan if available.

NOTE: Hazardous waste are those identified in 40 CFR 261. Hazardous constituents are those listed in Appendix VIII Of 40 CFR Part 261.

See attached sheet.

*There is an 8,000 gallon product recovery tank originally listed on the Part A application. Since its installation in 1980 we have found that the solvents recovered in this tank are being beneficially reused. Therefore, we have not included this tank in our Part B application.

**The container storage area is in the Part B application.

3. For the units noted in Number 1 above and also those hazardous waste units in your Part B application, please describe for each unit any data available on any prior or current releases of hazardous wastes or constituents to the environment that may have occurred in the past or still be occurring.

Please provide the following information

- a. Date of release
- b. Type of waste released
- c. Quantity or volume of waste released
- d. Describe nature of release (i.e., spill, overflow, ruptured pipe or tank, etc.)

No releases.

4. In regard to the prior releases described in Number 3 above, please provide (for each unit) any analytical data that may be available which would describe the nature and extent of environmental contamination that exists as a result of such releases. Please focus on concentrations of hazardous wastes or constituents present in contaminated soil or groundwater.

No releases.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (42 U.S.C. 6902 et seq. and 40 CFR 270.11(d))

James D. Idol, Jr., Vice President Venture R&D
Typed Name and Title

James D. Idol, Jr.
Signature

4-10-85
Date

